Service
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LASER FAX

OKIFAX 4510

Service Manual

Plain Paper Fax - with Laser technology

A compact laser fax machine with passive fax switch, without comfort telephone, with Caller ID (country and network dependant) and document memory.

Safety regulations require that the set be restored to its original condition
and that parts which are identical with those specified be used.

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1 Precautions

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Be sure to read the following precautions to prevent any accidents and damages of the product, which can be happened during service.

1-1. Precautions for Safety

1. Check that all of the safety appliances are worked normally, and if you have any trouble, take the necessary measure as soon as possible.

2. Keep children away from the product and do not allow them to place the dangerous around the product, in order to prevent any accidents.

3. Don't forget to put the cover and safety devices back when they belong, after the maintenance or reinstallation.

4. Our gratuitous warranty does not cover defects that arise as the use of parts not provided or supported by PRIX.

5. Replace the overheated and damaged product immediately. Also, find and fix faults that can cause any troubles in advance.

6. Don't change location of the product and the form of other parts at your discretion during service.

7. Precautions for safety of the product
   There are some electrical and mechanical parts in the product, which have important satety functions you can't see. If they are replaced with other parts, their safety functions can not be operated normally. Be sure to use the approved parts, because the part with identical function but with different purpose may cause dangerous accidents.

Pay more attention to instructions with these marks. Make sure that the electric and thermal parts should be used as designated in the specifications. Otherwise, it may cause a dangerous accident such as fire or electric shock.

⚠	CAUTION Danger of explostion if battery is incorrectly replaced. Replace only with the same or equivalent Type recommended by the manufacturer. Dispose of used batteries according to the manufacture' s instructions.

1-2. Precautions for ESD

The semiconductor devices in the product can be damaged by static electricity. These parts, called ESD (Electronically Sensitive Devices), contains IC and semiconductor chip, etc. Read the following precautions to keep the damage of ESD from static electricity.

⚠	Unplug the product from the wall outlet, and keep the following instructions in mind for the safety.

1. Before you touch the semiconductor or other parts with semiconductor, remove the static electricity from your body. You can hold on the grounded part or wear the antistatic straps on the wrist.

2. If you put the electrical part with ESD on the surface of conductor (aluminum or copper plate, etc.) after separating it from the product, you can prevent static electricity from generating.

3. Use the grounded soldering iron, when you separate the part with ESD from the product.

4. If you don' t use the soldered static eliminator, the product will be damaged by static electricity.

5. Don' t use the chemical goods with Freon gas. ESD can be damaged by static electricity generated from the sprayed Freon gas.

6. Don' t unpack the ESD replacement before starting to install. Because ESD is mostly packed with the conductive box or aluminum box, it can prevent static electricity.

7. Make the leads of part touched with the circuit, before you rip the non-conductive tape off from ESD replacement.

8. Electrical contact should be maintained until ESD is inserted into the proper place completely or is adhered to the circuit.

9. Be careful of your movement when you treat the unpacked ESD replacement. The activity rubbing with clothes or holding up foots on the carpet may cause to generate static electricity and make ESD damaged.

1-3. Product Specifcation

Subject	Specifcation	REMARK
System Structure		Without Packing
• Dimensions	449mm(W) X 325mm(D) X 165mm(H)	
• Weight	Approximately 8kg	
• Accessories	Toner Cartridge(With Drum)	
	Document Input Tray	
	Document Exit Tray	
	Centronics Cable(not Include USB Cable)	
	User's Manual(with Warranty Card)	
Print Unit		
• Print Method	Electro-Photography(Laser)	
• Print Resolution	600dpi X 600dpi	
• Print Speed	8 PPM (A4)	
• Paper Input Method	Cassette	
• Paper Input Capacity	125 sheets	
• Paper Input Size	A4 / Letter / Legal	
• Paper Input Thickness	60to90g/㎡≥(16to24lbs)	
• Effective Print Width	208mm	
• Paper Exit	Face Up	
• Paper Stack	50 sheets	
• Toner Cartridge Yield	1000 sheets (5% density) - Initial	
	3000 sheets (5% density) - Replace	
Characteristics		
• Power	AC 220V, 60Hz	
• Power Consumption	Operating Under Max 400W	
	Under Avg.200W	
	Waiting Under 20W	

Subject	Specifcation	REMARK
Copier Function		Without Packing
• Scan type& Method	Sheet-fed, CIS	
• Copier Speed	4PPM (A4)	
• Resolution	300dpi X 600dpi	
• Enlarge/Reduction	50~200%(5% units)	
• Number of Copies	1~99 copies	
• Memory Capability	2MB DRAM	
• Modem speed	14.4KBPS	
• Gray scale	64 Levels	
• Coding	Superfine, Fine, Standard	
Telephone		
• Handset	Built-in	
• Auto Start	YES	
• Remote Fax-Start	YES(DTMF detection)	
• TAM	External TAM interface	
• Caller ID	Ready (V. 23 or DTMF)	
• Dial Method	DTMF (DP is supported under T/A or buyer requirement)	
• Alpha Dial directory	YES (99 stations)	
• One-touch	YES (12 Keys)	
• Group Dial	YES (50 stations)	
• Last Number Memory	YES (last 5 numbers)	
• Power down function	NO	
• Hands-free listening	YES	
• Distinctive ring detection	YES (It is supported under T/A or buyer requirement)	

2 Assembly and The Principle of Operation

OKIFAX 4510

2-1. ADF(Automatic Document Feeder) ASS'Y

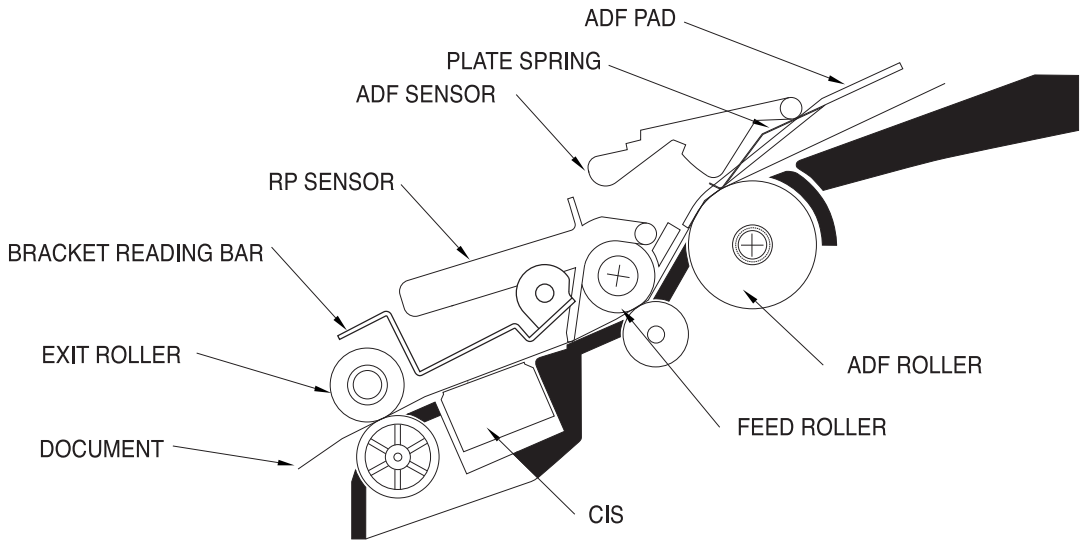
Automatic Document Feeder (ADF) consists of ADF roller, FEED/EXIT roller and Spring. It separates documents, sends them to CIS, and makes them pile up on the Document Exit Tray. It is allowed to insert up to 15 sheets at a time.

1. Document Set and Paper Feeding

If you put documents on the feeder tray, the inserted side of document makes ADF SENSOR operated, and SCAN MOTOR starts to be driven. With the drive of SCAN MOTOR, documents are being entered and stop at the RP SENSOR. By ADF PAD, documents are separated and entered into the feeder one by one. The pressure of PLATE SPRING makes ADF PAD separate documents successfully, and the previously separated document helps other papers to go into without any errors by the pressure of ADF PAD.

2. CIS (Contact Image Sensor)

CIS consists of a lot of LED, SELF FOCUS LENS ARRAY, PHOTO SENSOR, PACKAGE FRAME. If a light source of LED flashes on documents, light energy is integrated into the PHOTO SENSOR through the ARRAY and is transformed into electrical signals.

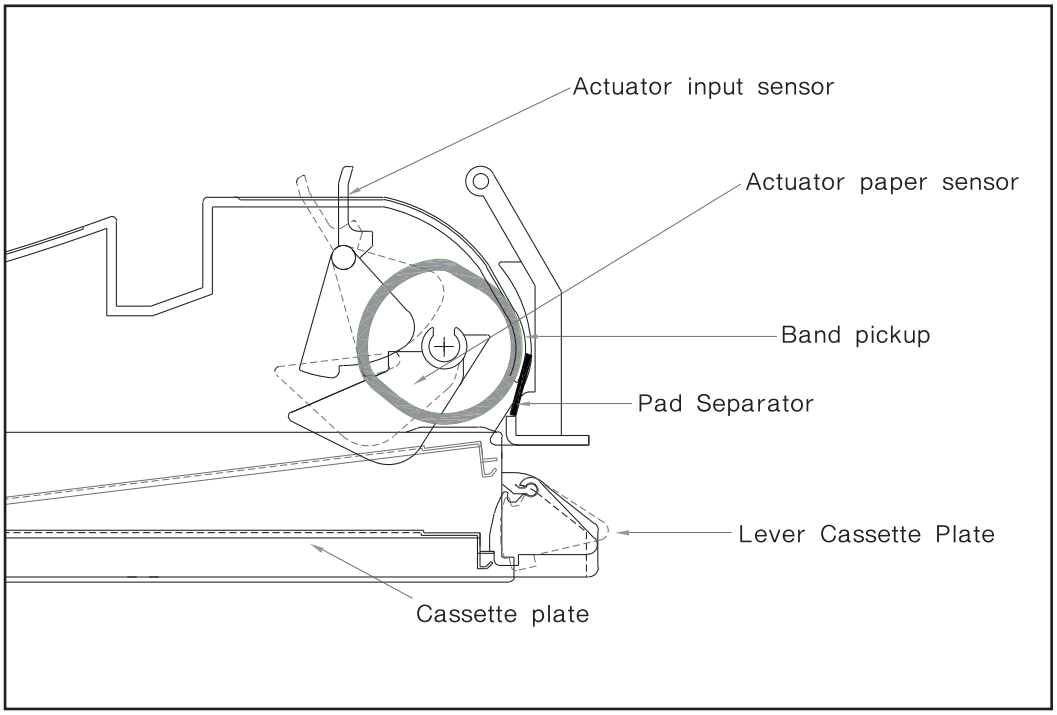


3. SENSOR

ADF Mechanism consists of ACTURATOR, ADF SENSOR and ACTURATOR, RP SENSOR. ACTURATOR, ADF SENSOR checks up if papers are placed, and ACTURATOR, RP SENSOR perceives the start point of document reading, inserted side of document.

2-2. PICK UP ASS'Y

1. Structure of PICK-UP and CASSETTE



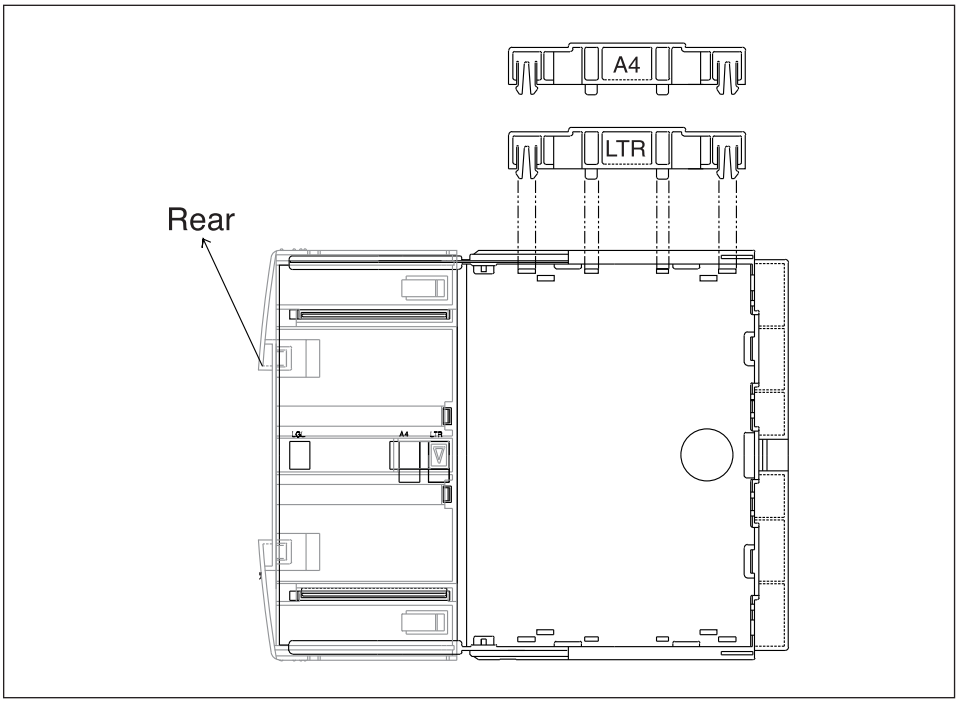
2. The Principle of operation

■ Pressure on the cassette: When the CASSETTE PLATE is pressed down in order to supply with papers easily, it was locked at the lowest part by LEVER CASSETTE PLATE. When papers are placed and the cassette is set to the product, the cassette plate is unlocked by the rib of product base. And then, papers are held up to the proper height by pressure spring and becomes on standby. .

■ Separation : The pick-up paper makes friction with PAD SEPARATION adhered to FRAME PAPER PAD. Multi and Mis are prevented by the interrelation with frictional force of PAD SEPARATION.

■ Paper Feed : If print signal is input, MOTOR revolves. Then, FEED CLUTCH is ON and turns FEED ROLLER AXIS around. Because the semicircular PICKUP ROLLER is set around the FEED ROLLER AXIS, papers in the cassette can be entered by revolving of the axis.

■ Control of Cassette Size : Cassette size can be adjusted into A4, Letter or Legal by Guide Paper L.R and Cassette Rear.

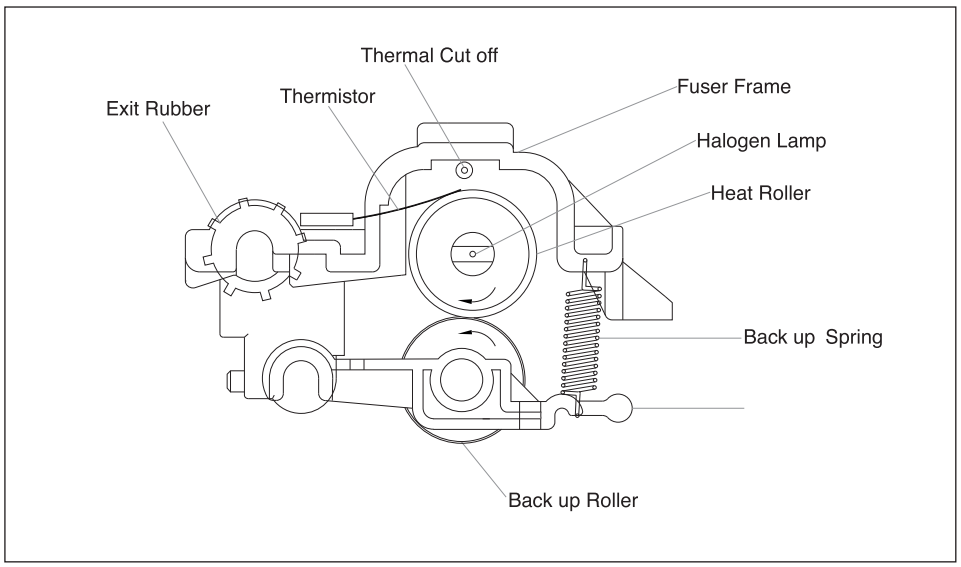


The Location of Parts suited to each Paper Size

Paper Size / Parts	Guide Paper	Frame CST Rear
A4	A4	A4
Letter	LTR	LTR
Legal	LTR	LGL

2-3. Fuser ASS'Y

1. Structure Diagram



2. Structure

■ The Fuser System
- HEAT ROLLER Type
- Temperature control by THERMISTER and Prevention of overheating temperature by THERMAL CUT OFF

■ Fuser Pressure
- Fuser by BACK UP ROLLER and Back up SPRING

■ Temperature of Fuser Control

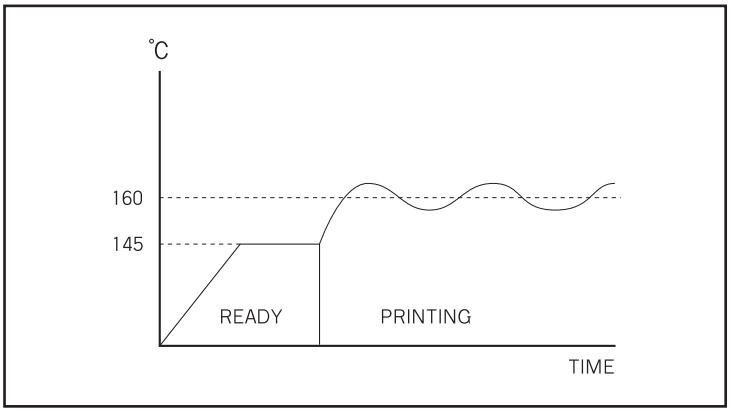
3. Assembly

■ The Fuser System: The non-fuser TONER of papers sent from the transfer part is fused by the regular temperature and pressure when it passes between HEAT ROLLER and BACK UP ROLLER. The THERMISTOR on the FUSER ROLLER perceives TEMPERATURE, and has control of ON and OFF for HEATER(220V/400W). Also, THERMAL FUSE is put around HEAT ROLLER, and it blocks the electrical power by melting away the inside of FUSE, when HEAT ROLLER is heated abnormally and the temperature goes up rapidly.

■ Fuser Pressure: HEAT ROLLER and BACK UP ROLLER maintain the pressurized conditions by the SPRING.

■ Fuser Drive: HEAT ROLLER is driven by the MAIN MOTOR through the GEAR. If HEAT ROLLER revolves, EXIT ROLLER connected by GEAR also turns around.

■ Temperature Control of Fuser



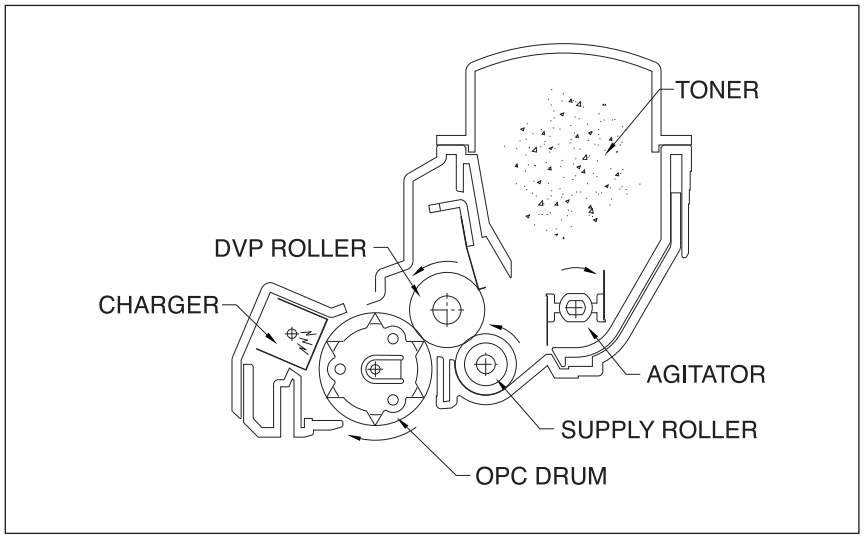
- If the electric power is ON, HEATER also becomes ON and the FUSER temperature is controlled into 145 °C (Ready Temperature). If papers are fed to print, the FUSER temperature is gone up to 155 °C.

- If the signal for COPY and PRINT is input, HEATER becomes ON and is controlled into 155 °C. If the temperature is detected as 155 °C, it is regarded as a print signal, and papers are sent for printing.

- The Detected Troubles in temperature of Fuser
  Faults of THERMISTOR
  Disconnection of THERMISTOR HARNESS
  Contamination of THERMISTOR surface placed on HEAT ROLLER

2-4. Cartridge ASS'Y

1. Structure of CARTRIDGE



2. Operation Principles of CARTRIDGE

① The Process of Electrical Charge

ϕ 30㎛ Tungsten Wire is installed in the above CHARGER, and the electric current of approximately 250㎂ flows through this wire. The electric current in this wire passes the GRID (maintaining 750V) through, and makes the surface of DRUM charged. On the DRUM, there will be an electrically charged surface at about 800V.

② Exposure Process

Laser Beam from the LSU Ass'y descharges the DRUM surface charged at about 800V to about 100V.

③ Development Process

In the Development process, there are SUPPLY ROLLER(+600V) which supplies TONER to DVP ROLLER, BLADE(+600V) which chages TONER and lets the TONER pass in identical thickness, and DVP ROLLER(+350V) which sends TONER to the discharged surface by Laser Beam on the DRUM.

④ Transfer Process

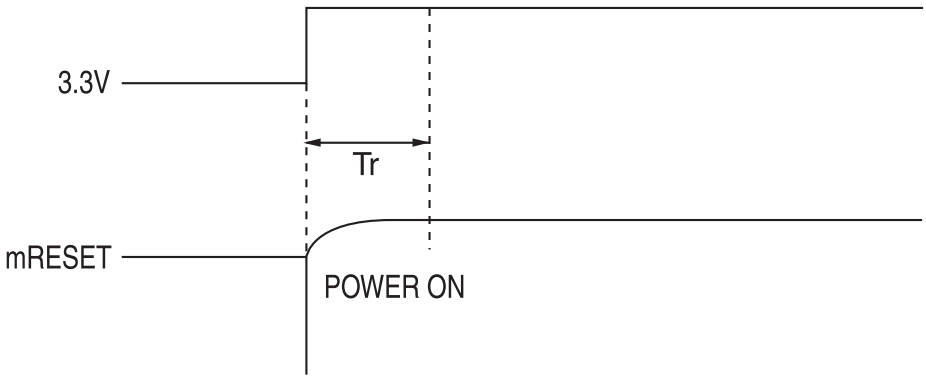
This process is to move and stick the TONER on the paper, by pulling the TONER adhered to the DRUM through the Development Process.

3-1. The explanation of Electricity

1. Power on and system reset

When the power cord is connected to the fax machine, the power board supplies the power source to each circuit(+5V, +24V, -12V). mRESET signal is occurred by R16 and CE6 (RESET circuit) on the MAIN BOARD. This signal is input into the ENGINE INPUT (MAIN-U2-80 PIN) and makes ENGINE reset.

After ENGINE is initialized, it is saved in SRAM and checks DATA.
If the wrong DATA is saved, save the default DATA value in SRAM again.
After finishing these procedures, the machine turns into STANDBY.



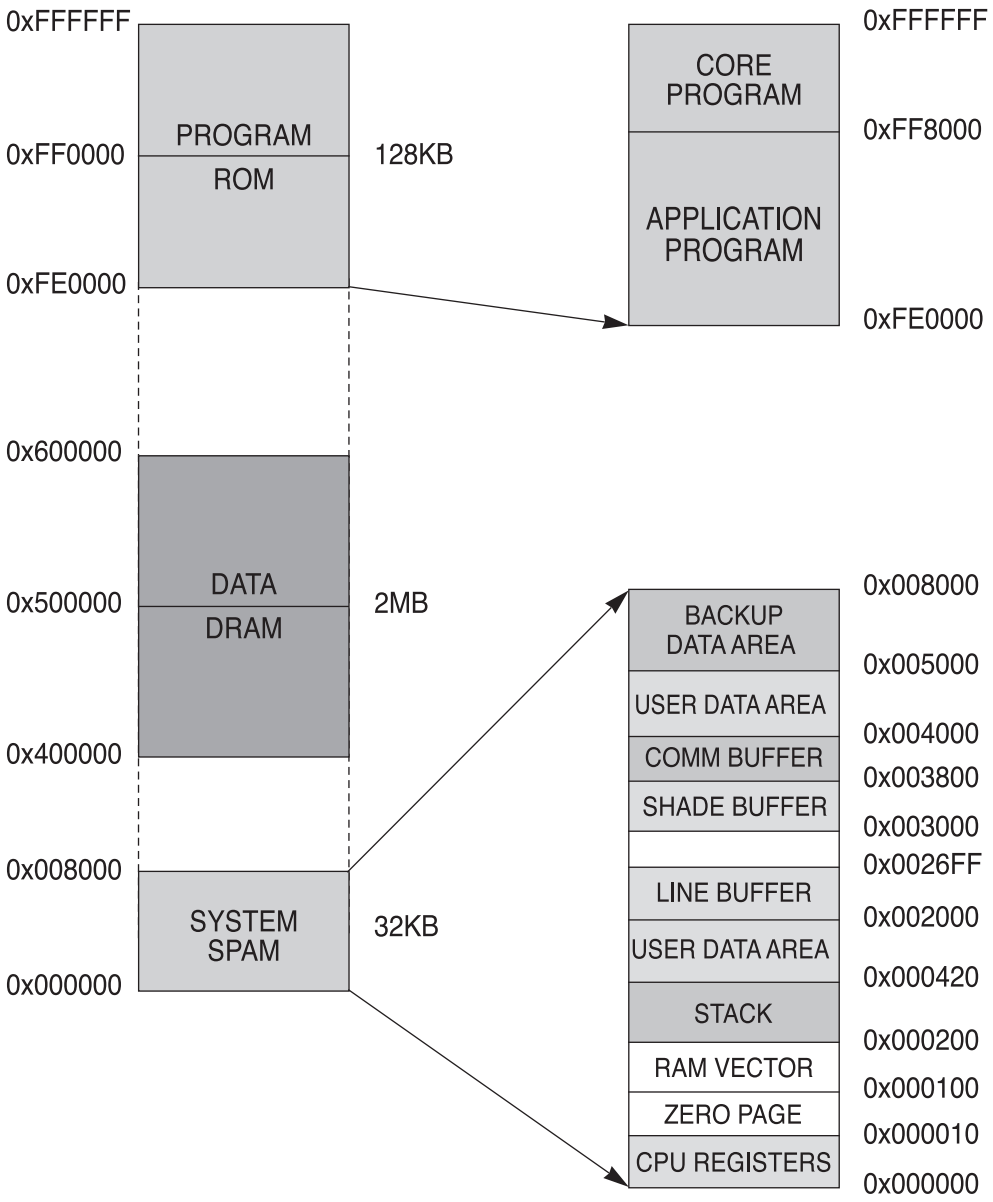
SYSTEM RESET TIMING

2. MEMORY

- EEPROM (U6) : ROM includes area to make a program of 128 Kbyte. It can access to the area from FE0000 to FFFFFF. ROM acts in ACCESS TIME of 70nsec except WAIT CYCLE.

- SPRAM(U11) : SRAM is STATIC RAM of 32 Kbyte. BATTERY-BACKUP SYSTEM supplies with electricity to preserve the contents of RAM even though the power is disconnected. It can access to the RAM area by using ADDRESS from 000000 to 008000. RAM uses SYSTEM STACK, PROGRAM WORKING DATA SAVE, DOCUMENTS SENDING/RECEIVING BUFFER, COPY BUFFER, and other SAVE AREAS.

- DRAM (U8) : DRAM saves the received DATA as DYNAMIC RAM of 2Mbyte.



3. Documents Setting

If documents is inserted into ADF(Automatic Document Feeder), it is acknowledged by DDS(Document Detection Sensor). This is detected as DDS signal in the ENGINE (MAIN-U2-51PIN). TM motor signal (TM[0..3]) and +24V are approved as TM motor control IC(MAIN-U24) in ENGINE(MAIN-U2). Signal produced from this process is transmitted into TM motor and is driven.

4. Documents Scanning

This system uses CIS(Contact Image Sensor) to scan data of documents. Electricity should be supplied to LED of CIS to operate CIS. CISON signal of ENGINE(MAIN-U2-116 PIN) turns into HIGH, and then it makes Q9 of MAIN BOARD drive and +3.3V(CIS) is supplied to LED of CIS. After LED is ON, CIS receives CISTR(MAIN-U2-118 PIN) and CISCLK(MAIN-U2-115 PIN) signal. And when CISTR SIGNAL is transmitted as LOW-> HIGH signal, the 1728 IMAGE DATA are shifted into SERIAL and are printed. IMAGE DATA of CIS turns into CISCLK, and each CISCLK TIME reads VIDEO DATA. Documents are scanned, and the read VIDEO SIGNAL is input in VIN (MAIN-U2-84 PIN).

5. PRINT

DATA for COPY, RECEIVING and a variety of REPORTS is printed through LSU(Laser Scanning Unit) by ENGINE(MAIN-U14).

6. Sending

- General Sending

ENGINE(MAIN-U2) saves one-lined IMAGE DATA in SRAM(MAIN-U11). After MR CODING of DATA, whenever it turns into IA(MAIN-U1), coded image data is transmitted 1 BYTE by 1 BYTE. Coded Image Data TXOUTP is transmitted into TX AMP(MAIN-U7). The altered DATA is filtered, and only the pure signal is transmitted into the telephone line through the AMPLIFIER and MATCHING TRANSFORMER (MAIN-T2).

- Memory Sending

ENGINE(MAIN-U2) saves one-lined IMAGE DATA in the SRAM(MAIN-U11). After MMR CODING of the saved IMAGE DATA, they are saved in DRAM(MAIN-U8) again. All of the requested DATA are saved in DRAM with this way. After coded image data saved in the DRAM is transformed with MR CODING, whenever it turns into IA(MAIN-U1), coded image data is transmitted 1 BYTE by 1 BYTE. the saved IMAGE DATA. The altered DATA is filtered, and only the pure signal is transmitted into the telephone line through the AMPLIFIER, ANALOG SWITCH(MAIN-U5-12 PIN) and MATCHING TRANSFORMER (MAIN-T2).

7. Receiving

IMAGE DATA received through telephone line is transmitted to the MAIN BOARD through TRANSFORMER(MAIN-T2) and ANALOG SWITCH(MAIN-U5-12 PIN). CODED IMAGE DATA is input into IA(MAIN-U11) through RX AMP(MAIN-U9) of MAIN BOARD and is duplicated in ENGINE(MAIN-U2). Whenever DATA is turned 1 BYTE by 1 BYT, they are saved in DRAM(MAIN-U8). IMAGE DATA saved in DRAM is printed by ICU(Image Control Unit) PART.

8. Memory Receiving

When there is no paper or it is jammed, the received DATA is saved in the DRAM(MAIN-U8). If you place papers in the CASSETTE and set them, the saved data in MEMORY is printed.

9. Memory Back-Up

If the power source(+3.3V) starts to lower under +2.9, RESET circuit of MAIN BOARD detects the electricity and transforms SRAM into MEMORY RETENTION MODE. Namely, if the electricity lower under 2.9V, CHIP SELECTION of SRAM turns into LOW and it is transmitted into MEMORY RETENTION MODE. And, if the POWER is OFF completely, BACK-UP BATTERY supplies the electricity to SRAM in order to prevent DATA from disappearing and damaging.

10. LSR Relay (MAIN-K1)

According to MODE, FAX, TEL MODE within FAX and EXT(TAM) are relaid.

11. Line Transformer (MAIN-T2)

Out of AC and DC signal input from LINE, AC signal is transmitted into FAX, DC signal is blocked and LINE and IMPEDANCE are matched.

12. Ringing Detection (MAIN-U32)

If Ring signal is input through LINE, mRI signal of PHOTO-COUPLE is transmitted into mRI(MAIN-U2-54 PIN) of MAIN BOARD by repeating HIGE-LOW., and RING Signal is realized automatically

13. Volume Control

ENGINE(MAIN-U2) recognizes RING, makes PSEUDO RING(MAIN-U2-120 PIN) and transmits to SPEAKER. Also, BEEP SOUND and MONITORING can be varied.

14. DP Dialing (Setting the DP MODE)

If you pick up DP DIALING H/S after setting DIAL MODE into DP MODE, or you press DIAL KEY after pressing OH-HOOK KEY for the formation of the LINE, KEY for ENGINE(MAIN-U2) is recognized, PHOTO COUPLER(MAIN-U33) becomes ON/OFF, LINE OUTPUT TR(MAIN-Q13) becomes ON/OFF, and DP PULSE is generated.

15. DTMF Dialing

Dial should be set to DTMF MODE. If you press DIAL KEY after forming LINE, KEY for ENGINE is recognized, DTMF SIGNAL for appropriate KEY is transmitted to MATCHING TRANS(MAIN-T2) and is output to LINE.

16. Transmitting a voice

By using HANDSET, voice signal is output to TEL. LINE through NETWORK IC(MAIN-U35).

17. Receiving a voice

Voice signal is input from TEL. LINE, it is transmitted to HANDSET through NETWORK IC(MAIN-U35), and the opposite side' s voice can be heard.

18. Hook detection

If you pick up HANDSET in order to make a call or dial, HOOK switch is operated mHOOKD signal is generated in ENGINE(MAIN-U2-142 PIN) through 1 PIN of MAIN B/D CN6, and in LOW, HOOK Switch is detected.

3-2. ICU PART

1. The Synopsis of Circuit

The circuit of this product consists of the following block.

- SYSTEM Controller
- PRINT MOTOR Controller
- POWER (S.M.P.S & H.V.P.S)

(1) SYSTEM Controller

The circuit of the system controller is as follows;

1. U14(CPU) and Peripheral (SYSTEM Controller)
2. LSU(LASER SCAN UNIT) Controlling Circuit
3. HEATER Controlling Circuit
4. Cover OPEN S/W Peripheral Circuit
5. PRINT PORT Peripheral Circuit
6. USB PORT

1-1. U14(CPU) and Peripheral (SYSTEM Controller)

S3C4660X01 is used for CPU, and it has function to control the MEMORY. This CPU exchanges DATA through DATA BUS and ADDRESS BUS of 16 Bits, and the peripheral circuit consists of FLASH MEMORY and DRAM.

1-1-1. CPU (S3C4660X01, U14)

The feature of S3C4660X01(KS32C65100) is as follows:

- Architecture
  - 16/32-bit RISC architecture
  - Efficient and powerful ARM7TDMI CPU core
  - Cost-effective JTAG-based debug solution

■ System Manager
- 16-bit external bus support for ROM. 8/16-bit external bus support SRAM, DRAM (Fast Page, EDO), external I/O
- Programmable access cycle (2-7 wait cycles)
- Support idle mode for low power consumption

■ Unified Instruction/Data cache
- Two way set association cache with 2KB
- LRU (Least Recently Used)
- Four depth write buffer

■ PLL Frequency Synthesizer
- Input freq. Range : 10MHz ~ 40MHz
- Jitter : ±150 ps
- External loop filter : 820 pF

■ DMA (Direct Memory Access) Controller
- 3-Channel DMA Controller
- Memory-to-print block with decompression
- Memory-to-memory, memory-to peripheral port, peripheral-to-memory, UART-to-memory, IP-to-memory, memory-to-IP data, I/O-to-memory, memory-to-I/O data transfers without CPU intervention
- Initiated by software or external DMA request
- Increments or decrements source or 8-bit, 16-bit or 32-bit data transfer

■ Interrupts
- 31 interrupt source (external : 3)
- Normal or fast interrupt modes(IRQ, FIQ)
- Level or edge selectable 3 external interrupt

■ UART (SIO)
- Three channel UART (Serial I/O) with DMA based o interrupt based operation; supports 5-bit, 6-bit, 7-bit, or 8-bit serial data transmit/ receive
- Programmable baud rate
- Infra-red(IR) Tx/Rx support(IrDA)

■ General Timers
- Three programmable 16-bit timers

■ Watch Dog Timer
- 16-bit timer useful for periodic reset or interrupt

■ PWM Timers
- Three programmable 10-bit PWM timers with each prescaler

■ General ADC
- Three input 8/10-bit ADC with analog MUX (Max. conversion rate : 650KSPS @25MHz)
- ADC clock : MCLK/2 or MCLK/4

■ Scan Image Control
- Minimum scan line time : up to 2ms
- Supports 200dpi or 300dpi, include 8 bit ADC
- 25 ~ 200% reduction/magnification
- White shading & gamma correction
- LAT/EDF(2*3) Binarization, 256 Gray

■ Scan Motor Control
- Programmable 16 bit interval counter with interrupt
- Output phase and control signals at same time with counter interrupt

■ RTC (Real Time Clock) Unit
- 32.768 KHz clock
- The data includes second, minute, hour, data, day, month, and year

■ Peripheral Port Interface Controller
- DMA-based or interrupt-based operation
- Supports IEEE 1284 standard communication mode (compatibility mode, nibble mode, bytes mode, and ECP mode)
- Supports ECP protocol with or without Run-length Encoding (RLE)
- Automatic handshaking mode for any forward or reverse protocol with software/DMA

■ Carrier Motor Control
- Supports two kind of Motor (DC and stepper)
- Motor speed calculation and compensation
- Support Full/Half/Quarter step mode for stepper

■ Paper Motor Control
- Support two kind of motor driver (Uni-/Bi-polar)
- Support Full/Half/Quarter step mode

■ Derasterizer
- 16 * 16 bit block rotates by 90/270 degree
- Rotates 13 half words with selectable direction

■ Laser Printer Video Data Control

- Cost-effective, high-performance, DMA-based Laser printer engine interface
- Dedicated DMA for fast transfer between page memory and the printer engine
- Consecutive zero string (blank data) output for banded bit maps (no memory access required)
- Queuing operation to facilitate smooth switching between data block of banded page memory
- Pixel chopping mode for fine-edged image printing
- Video data/boundary polarity definition
- Support for 2x or 4x image expansion
- Dot counter to accumulate printing dot
- Generates test pattern for laser engine

■ Laser Engine Control

- Controls LSU on/off data and motor clock
- Controls LSU interface signals
- Programmable external clock for LSU motor

■ Operating Voltage Range

- Internal logic : 3 ~ 3.6 Volts
- PAD : 4.75 ~ 5.25 Volts

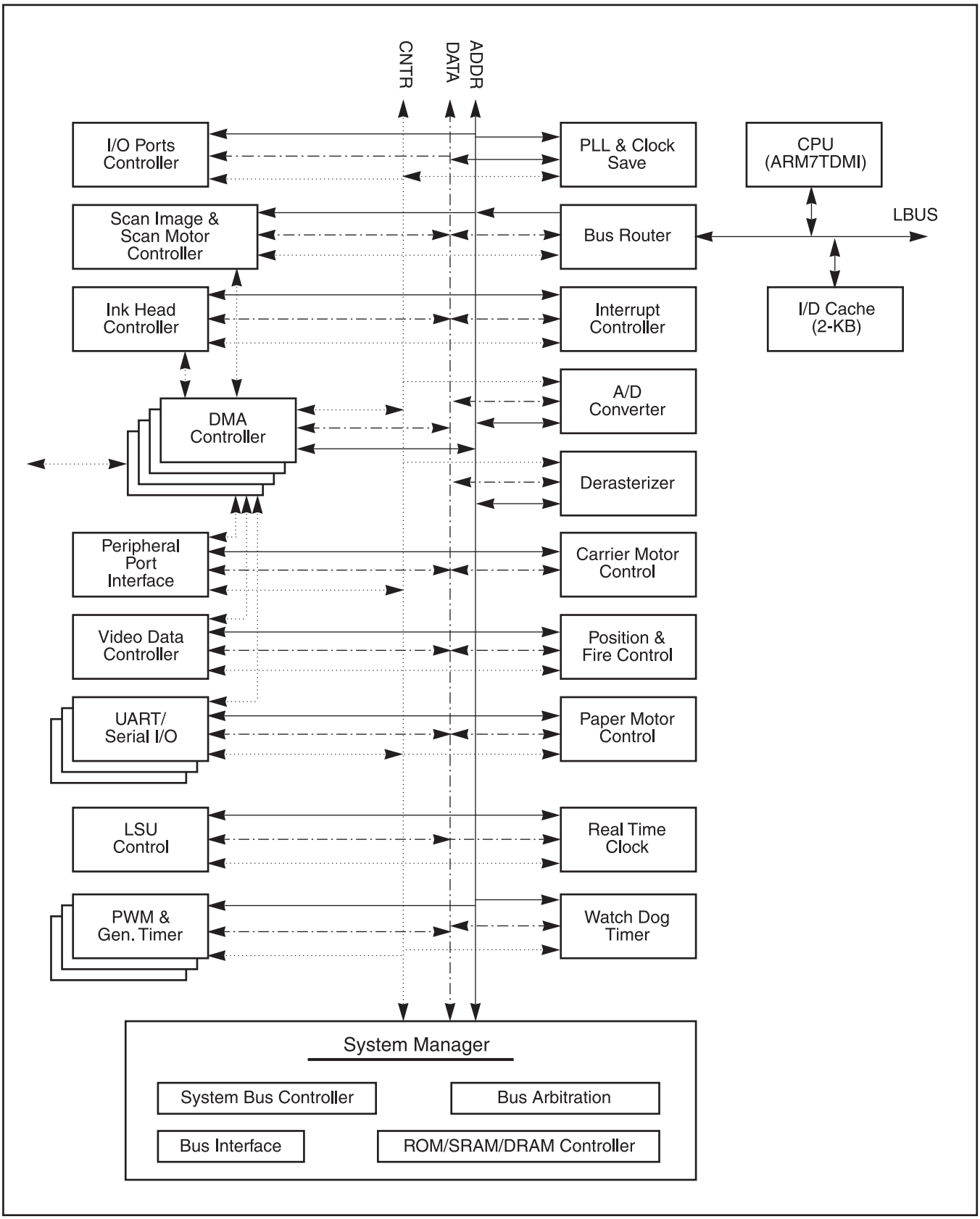
■ Operating Frequency

- Up to 33MHz

■ Package Type

- 208 pin QFP

■ The BLOCK DIAGRAM in the U14(S3C4660X01) is as follows;



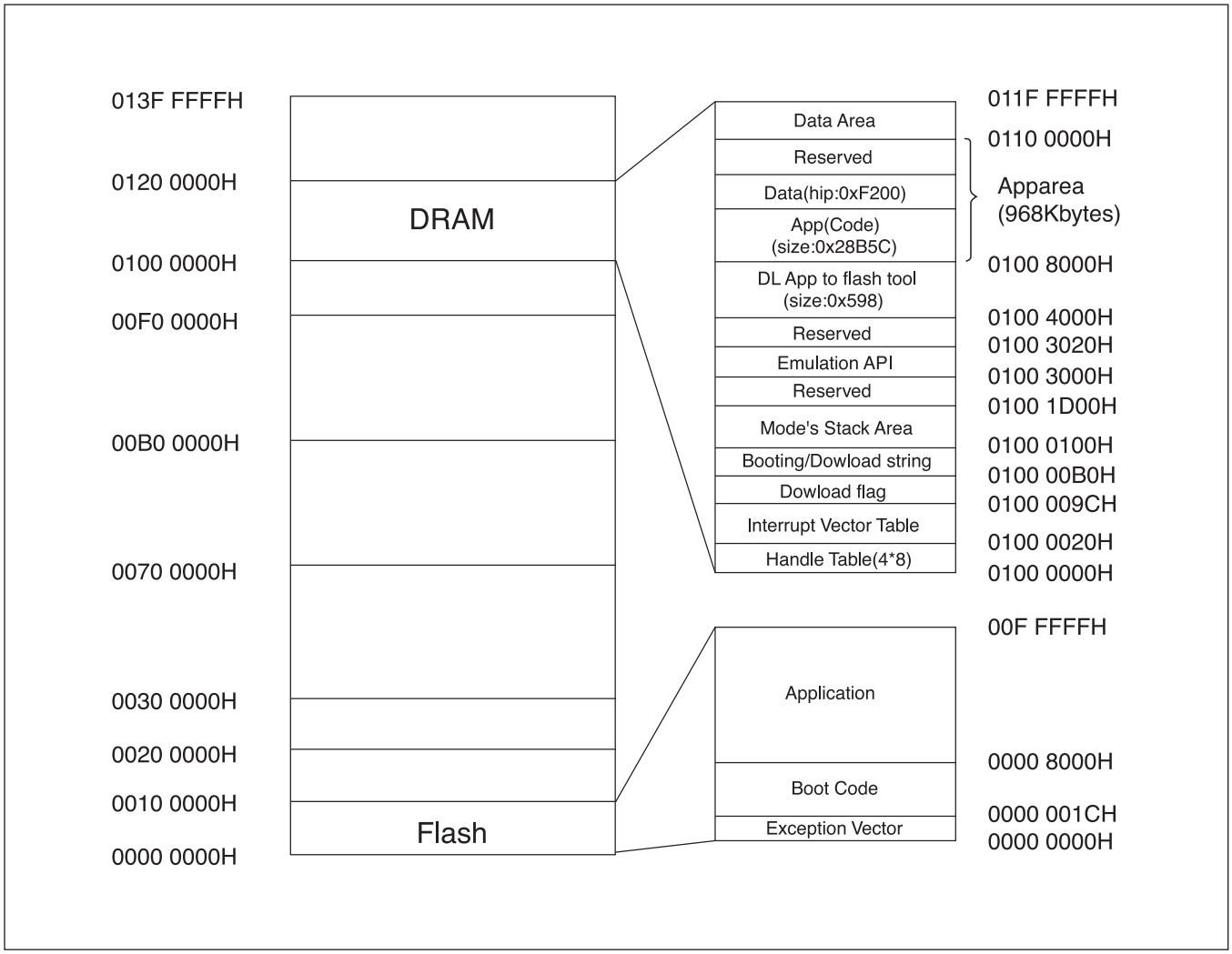
1-1-2. FLASH MEMORY (TE28F800C3BA90, U16)

8Mbit(512K*16Bit) Intel Flash Memory is used. It has 1Mbyte area up to 000 000H-00F FFFFH and saves Application Code.

1-1-3. DRAM (K4E151612D-TL50, U17)

Samsung EDO DRAM of 1M*16Bit is used. It has 2Mbyte area up to 100 0000H-011 FFFFH, and it is used as System Stack, Data Memory, and Save Area of Code Data for sending, receiving or copying.

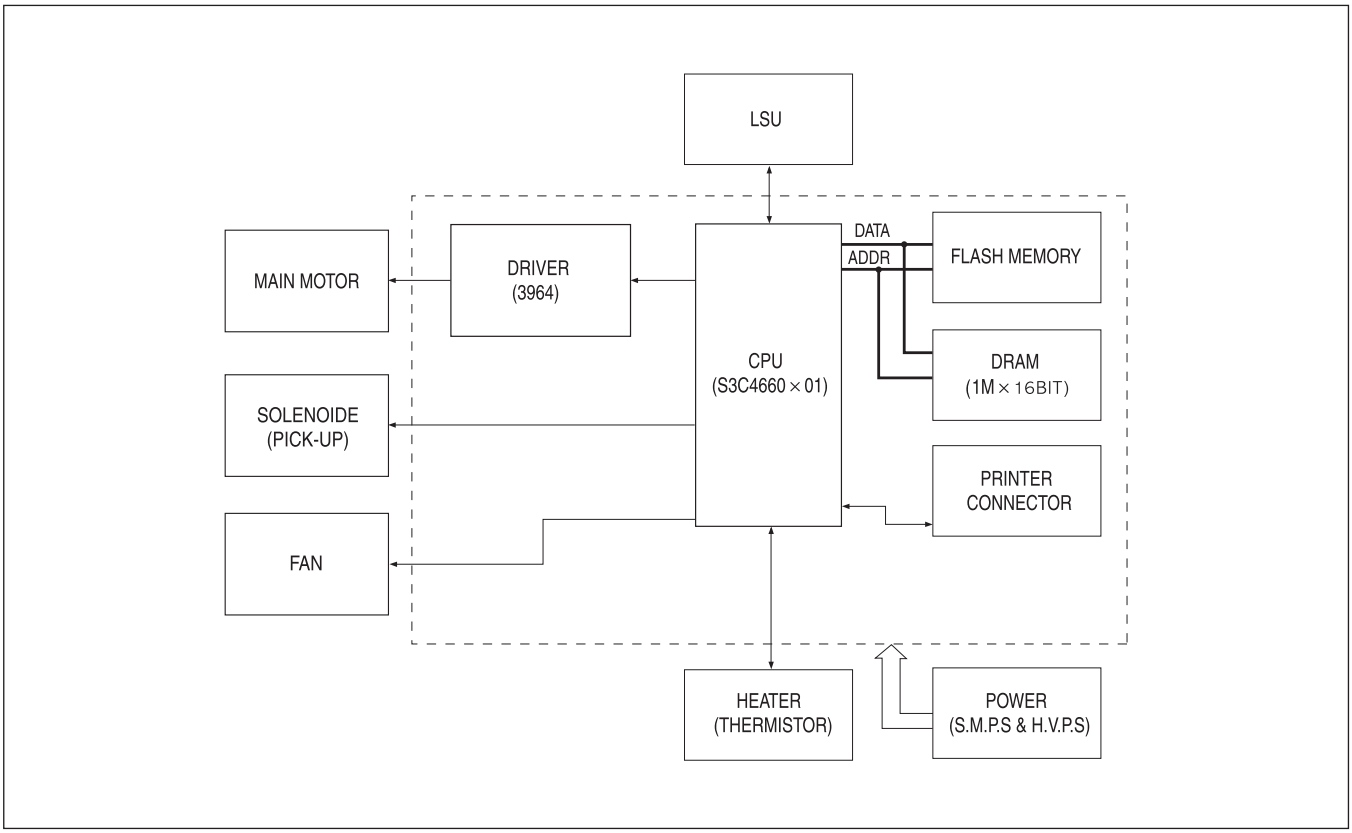
■ The structure of Memory Map is as follows;



According to the following process, SET SYSTEM is initialized.

POWER ON-> Initialization of the inside of REGISTER -> Initialization of ENGINE (Sensor check, Jam, etc...) -> Heater ON -> Initialization of LSU (Polygon moter, BD check, etc....) -> 50°C -> Printer Motor Start (Initialization of Drum, by the time that Heater Temperature comes up to 50°C) -> READY (Warming-up Finish)

■ The BLOCK diagram of system is as follows:



① Printer (For 755)

RAW Image Data is compressed in the Windows Printer Driver and is saved in the Memory of Controller through the IEEE1284 Cable. If the 1 page compressed data is completed to transmit, main motor is driven and the Sub Band compressed image is decompress in the real time. Then, it is sent to LSU line by line and is printed into image.

② Scan (For 755)

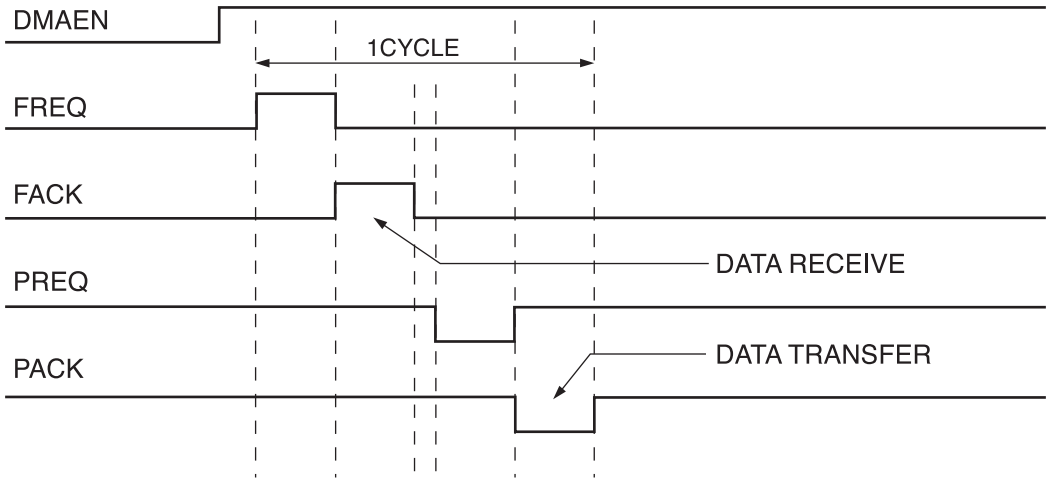
TWAIN, Scanner Driver is installed in the Windows and image data is scanned into PC using IEEE1284 Reverse Nibble Protocol between TWAIN and Controller. If documents are put on the Scanner Tray and the relevant Parameter is set in the TWAIN MENU and Scan Start button is pressed, image data is scanned from CIS and is saved in the Memory of Controller. To improve the speed, the compressed image data is transmitted to the PC. Then these are decompressed again in the PC and image data is sent to APPLICATION PROGRAM.

③ Copy

DMA method is used, and U31(iMA4A3-32, PLD) is used for FCU, Timing Delay of each signal for ICU PART and DATA Read/Write.

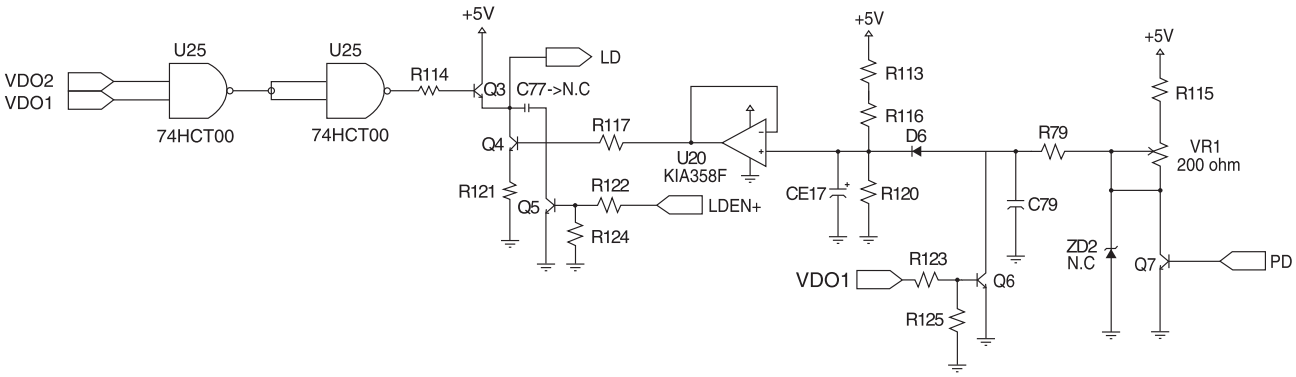
Each Signal Timing is delayed through the inside of Logic programmed for FCU, each ACK, REQ Signal of ICU PART, and data scanned in the CIS of FCU is transmitted into ICU and is printed.

■ The timing chart for each signal is as follows;



2-1. LSU (LASER SCAN UNIT) Controlling Circuit

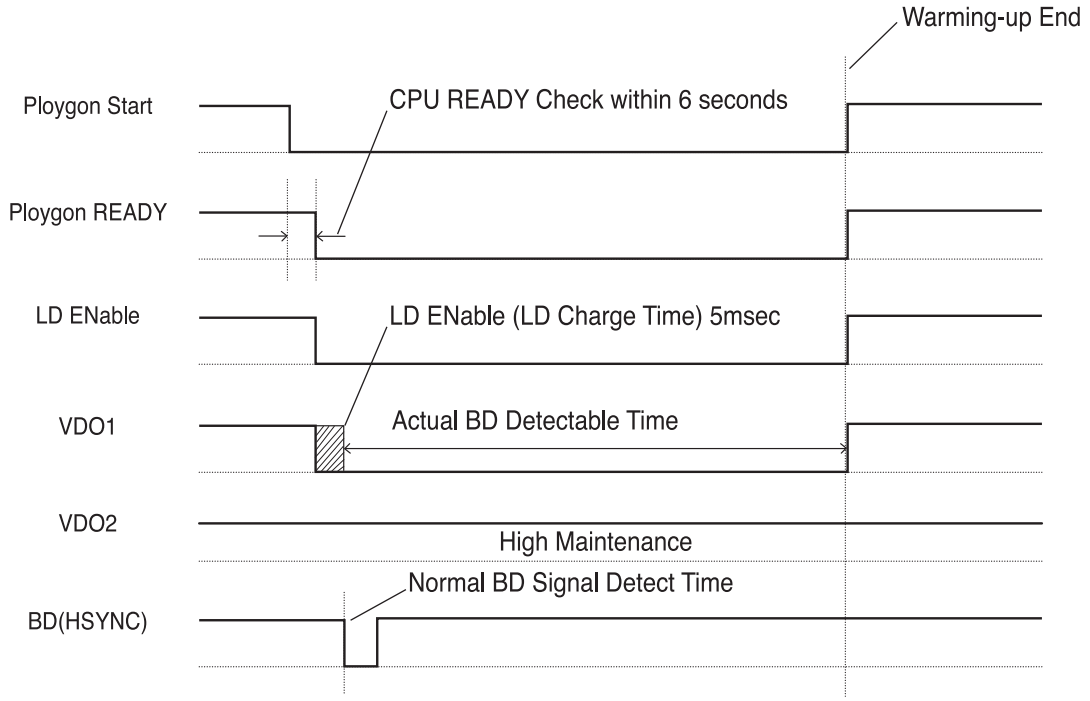
■ The BLOCK diagram of LSU Controlling Circuit is as follows:



As the above circuit diagram, VDO1 and VDO2 are VIDEO DATA, and VDO 1 is used for the initial warming-up or the initialization of printing. BEAM POWER of LSU is controlled by PD and is adjusted into 300 uW by Variable Resistance (VR1).

A/S	When MAIN CONTROLLER B/D is replaced, Variable Resistance (VR1) is controlled by using OPTICAL MULTIMETER (AQ2150A) and OPTICAL POWER should be reset into 300uW.

■ Warming-up & Printing Initial Time Chart is as follows;

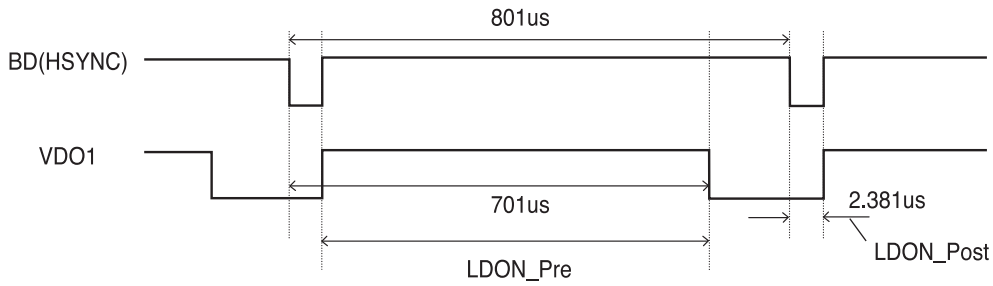


If power is on, CPU(S3C4660X01) makes PSTART#(Polygon start) Active[Low], and makes Polygon Motor move. If LSU unit keeps the normal speed, CPU makes PRDY# Active[Low] and informs that the normal speed gets.

If CPU gets PRDY#, it makes LDEN# Active[Low] and makes possible to use LD(Laser Diode) in LSU Control unit. At once, CPU sets VDO1 into Low and keeps VDO2 high.

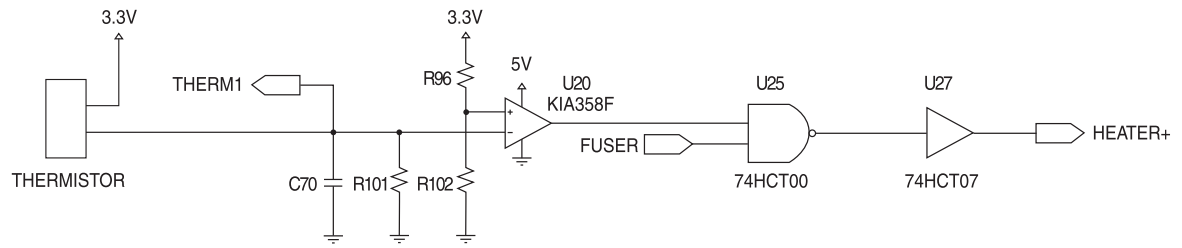
This means that LSU unit should detect BC(Beam Detect, HSYNC) Signal normally when VDO1 is low. Then, if CPU detect BD normally, VDO1 gets DATA Value.

After it detects BD Signal first, CPU sends out Data according to the following timing.



3-1. HEATER controlling circuit

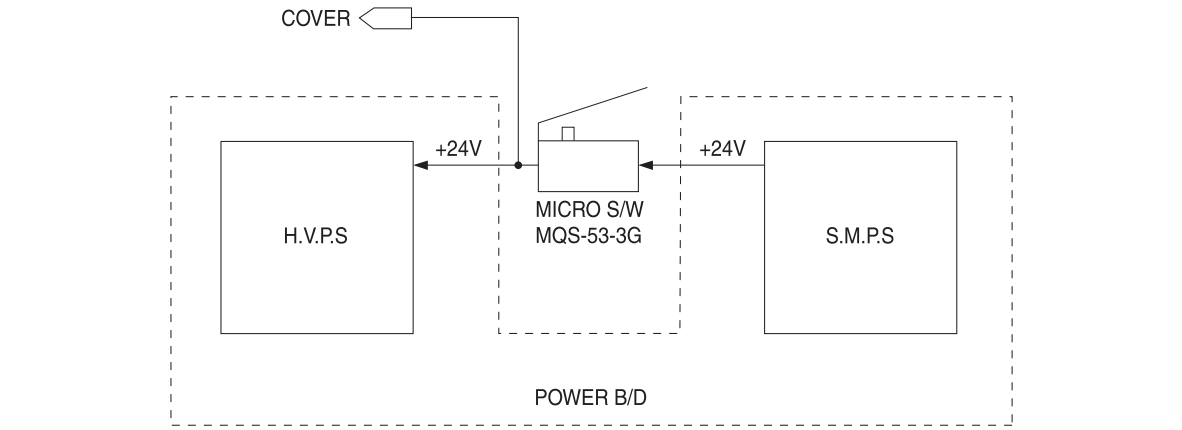
■ The controlling circuit for HEATER is as follows:



As the above circuit diagram, Analog value(THERM1) read through the THERMISTOR is connected to A/D CONVERTER (U14, CPU 208 terminal) and is controlled by it. In the READY status, the temperature (HEATER) in the Fuser is controlled into 145° C and makes Heater into ON/OFF using FUSER signal, and keeps the voltage of terminal to 1.58 V. In the printing status, it is 160 ° C and keeps the voltage to 1.89 V.
Also, when U20 (Comparator, KIA358F) is being moved, REFERENCE voltage is decided by R96, R102. If the HEATER CONTROL is normal, PIN No. 3 LEVEL keeps "HIGH", and if the temperature (HALOGEN LAMP) rises over 170° C, PIN No. 3 LEVEL is "LOW" and keeps the HEATER from turning on. (H/W PROTECTOR)

4-1. COVER OPEN S/W Peripheral Circuit

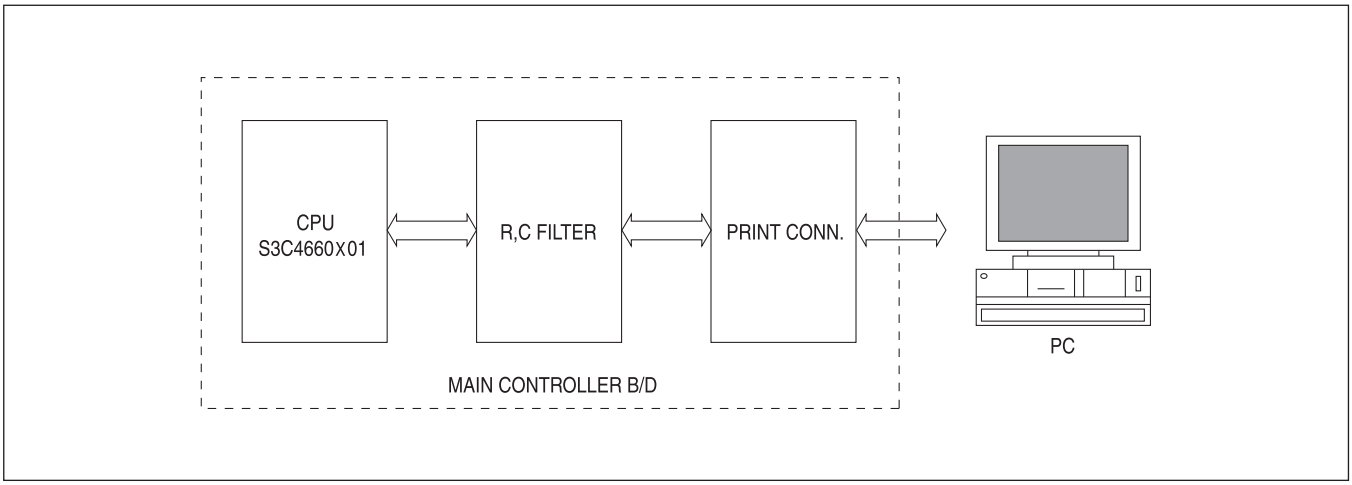
■ The BLOCK diagram of COVER OPEN is as follows:



As the above BLOCK diagram, 24V(source of H.V.P.S) provided from S.M.P.S is controlled through the ON/OFF of MICRO S/W(MQS-53-3G). Also by connecting COVER Signal to CPU PORT, it controls the status of cover.

5-1. PRINT PORT Peripheral Circuit (For 755)

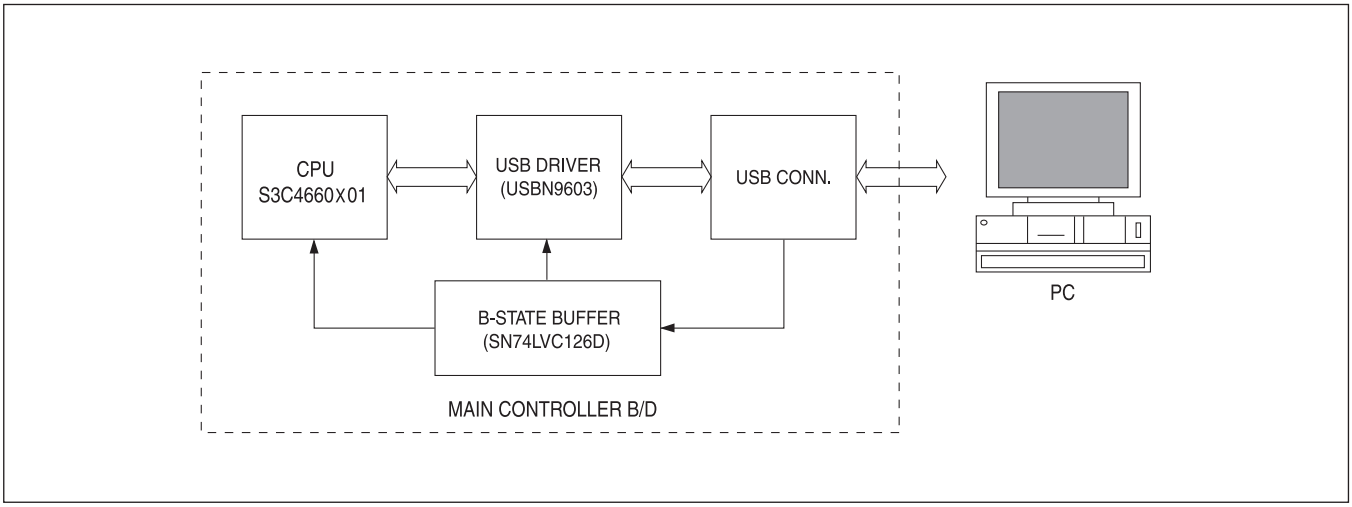
■ The BLOCK diagram of PRINT PORT is as follows:



As the above BLOCK diagram, each signal connected by CPU(S3C4660X01) of MAIN CONTROLLER B/D and PC is controlled through Reverse Nibble. Also, the noise of each signal is removed through R,C FILTER.

6-1. USB PORT

■ The BLOCK diagram of USB PORT is as follow:

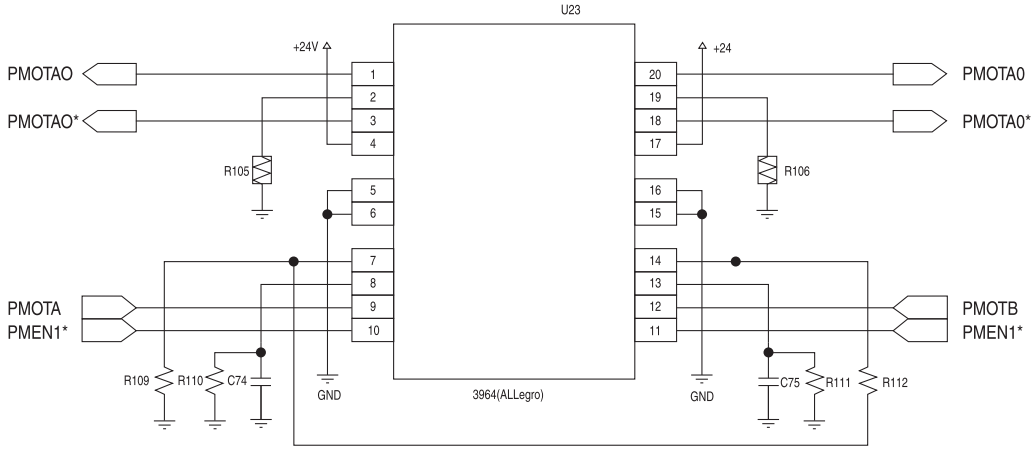


In BLOCK diagram illustrated above, The port is Controlled by the CPU(S3C4660X01) on Main Controller B/D is Connection to USB Driver(USBN9603).
In addition, Connection status of USB cable shall be recognized by the CPU through B-STATE Buffer(74LVC126D.)

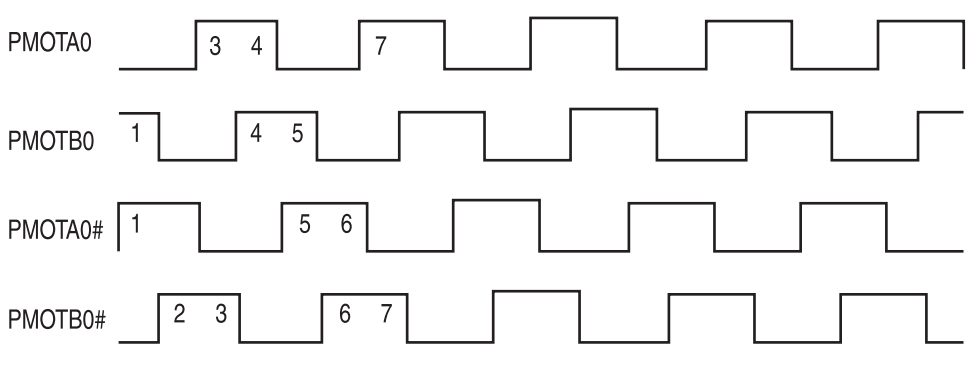
7-1. PRINT MOTOR Controller

The signals received from CPU(U14) are Phase 1, Phase 2, En 1 and En2 Signal, and the output signals printed from Motor are OUT1A, OUT1B, OUT2A and OUT2B.
The electric current of output signal can load up to maximum 1.0A in the 10 us, and continuously up to maximum 800mA. 3964(Allegro IC) can provide the Logic supply up to maximum 7V, but supplies 5V to PIN17. Load supply can be provided up to maximum 30V, but it is supplied 24V to PIN 4 in this product.

■ The CIRCUIT diagram for MOTOR controlling is as follows:



When power is on initially, Input Phase is received Low Value from CPU, and time is needed until the normal speed becomes. Bi-Polar step Motor Driver IC in this product uses the Chopping Drive method. Because it is the internal PWM type, it receives Phase Value in CPU during drive and it has output value of the following Timing Chart.



■ One Phase Input has the two output value inverted each other. The Phase True Table for this one is as follows:

Enable	Phase	OUT_A	OUT_B
High	X	Off	Off
Low	High	High	Low
Low	Low	Low	High

X = Don't care

(3) POWER (S.M.P.S & H.V.P.S)
The circuit of POWER is as follows;

1. S.M.P.S (Switch Mode Power Supply)

① AC Input and Rectifying Part
- The part of CN101-D601(D2SBA) is supplied with the commercial AC voltage (220V) and provides DC voltage to the Switching Block through D601. When the S.M.P.S circuit moves wrong, F601(250V 5A) FUSE is applied as the element of circuit protection and TH601(5D-11) Thermistor is used for the prevention against the inrush of electric current to protect the circuit element.

② Switching Part:
- The Part of C604-IC601 (IM0565RB) supplies the energy to the second part (DC output terminal 24V, 5V, -12V) using the rectified DC Voltage. If the rectified DC Voltage is approved and the moving voltage arises through R612 in the VCC of PWM IC601, Switching movement is started through PIN No. 2. It passes through the moving resistance (R612) of the first part, and after moving, VCC Voltage is supplied through the TI TRANS PIN No. 4 <-> PIN No. 5 Supplementary Electric Line. This is switched and comes out by itself to move safely against the alteration of the output voltage.

③ The second part (DC output terminal)
- -12 terminal : The rectified DC Voltage through D609 supplies -12V through IC603(KA7912) Regulation IC.
- +5V terminal : The rectified DC Voltage through D608 supplies +5V through IC602(278R05) Regulation IC. The use of C613, 614(16V, 1000 uF) is the electrolysis CAP which is used to remove the Ripple ingredients included in DC. When the problem arises, a lot of Ripple ingredients are included in the DC output terminal.
- +24 terminal : The rectified DC Voltage through D606 and D607 removes Ripple ingredients through C601, L601 and C611, and supplies DC voltage to the output terminal.

④ F/B Movement against Load Change
- When it moves initially, the movement of 24V electric voltage arises through IC604(KA431), PC601-1, R609 and R608. If the changed value of PC601-1 against the Load Change makes the difference of electric

potential between the C-E of photo transistor of PC601-2, PIN No. it gives changes to the 4 FB Terminal of IC 601, and by the internal circuit of IC 601, the alteration of the second output terminal gets more and more. It changes the switching part by itself, and keeps the stability of the second DC Output Voltage corresponding to the second output changes.

⑤ HEAT CONTROL Circuit

- The L Line Voltage of the commercial electricity power is approved through L602 in CN102-R619, and If the Control Terminal Fuseron is Low, PC 602(MOC3061) PHOTO TRIAC moves and it triggers Q602(TRIAC). Then, the L LINE voltage approved in L602 is approved to CN102, and makes HEATER move. According to the ON/OFF movement of CONTROL terminal, HEATER Voltage can be controlled.

1. H.V.P.S. (High Voltage Power Supply)

① Chopper Circuit

- The stable 18 V Reference Voltage arises in 24V by the association of Q301 and OP AMP.

② PRIMARY Output

- PRIMARY Output applies RCC Method by Output of Rectified Electric Power (250㎂)
- Output is ON by the PRBEN signal.
- The Base Electric Power of Switching TR(Q102) is controlled by the "DETECTOR(ZD102, R109, C103)" detecting the output power flowing through the output Load and the "Comparator(Q101)" comparing them

③ GRID, SUPPLY, DEV Output;

- GRID is the voltage, which is clamped with ZENDER DIODE the rectified power passing through the CHARGER Load in the PRIMARY Output.
- SUPPLY and DEV is the divided and clamped voltage in the PRIMARY output, and the output becomes ON by DEBEN signal.

④ TR, RTR Output, TRREAD:

- TR controls Switching TR(Q303) which compares the voltage, feedback in the Reference voltage and output, in the OP AMP. By the PWM DUTY RATIO of TRPWM signal, Reference Voltage is changed and the output voltage corresponding to this one arises.
- RTR makes output ON by RTRBEN signal and the regular output voltage arises by the BASE electric current.
- TRREAD feedbacks its own regular voltage on the resistance ingredients of output load when TR output arises.

3-3. S/W Description

1. Service Option

- Service Option is divided into 5 groups and can be entered as follows :

MENU + REDIAL/PAUSE(press three times within 2 seconds) + 7749

If you enter into SERVICE MODE with the above way, the message of "0 SYSTEM INIT." is showed, and you can continue to install.

- You can change RECALL PAUSE TIME into 3?2 with the following way.

Enter into the Service Mode with the above way. If you press [2] and [START], "2. SELECT SVC:01" is showed. Then, press [21] and [START], and the installation is completed.

1) Initialization and List

① Memory Initialization

- It is applicable to Service Mode "<<0>>".
- How to operate: After entering Service Mode, press [0] and [START]
- Function: It deletes S-RAM area and makes PARAMETER of S-RAM initialized.

② Service Parameter List

- It is applicable to Service Mode "<<1>>"
- How to operate: After entering Service Mode, press [1] and [START]
- Function: It is a function to output parameter of S-RAM. you can see the setting of the fax machine with SERVICE PARAMETERS LIST and changes all parameters.
- List contains as follows:

SERVICE PARAMETERS LIST

NAME :
FCU Ver : F755-F 1.03 (2002.06.24)
ICU Ver : F755-I 1.03 (2002.06.24)

<<0>> SYSTEM INITIALIZE
<<1>> SERVICE PARAMETERS
<<2>> REGULATION PARAMETERS

SVC201 →	10	SVC202 →	13
SVC203 →	70	SVC204 →	15
SVC205 →	6	SVC206 →	7
SVC207 →	0	SVC208 →	40
SVC209 →	60	SVC210 →	7
SVC211 →	2	SVC212 →	2
SVC213 →	99	SVC214 →	99
SVC215 →	8	SVC216 →	11
SVC217 →	15	SVC218 →	30
SVC219 →	10	SVC220 →	3
SVC221 →	3	SVC222 →	0
SVC223 →	40	SVC224 →	40
SVC225 →	0	SVC226 →	2
SVC227 →	0	SVC228 →	8
SVC229 →	8	SVC230 →	50
SVC231 →	70	SVC232 →	90
SVC233 →	110	SVC234 →	1
SVC235 →	7	SVC236 →	0
SVC237 →	0	SVC238 →	20
SVC239 →	30	SVC240 →	20
SVC241 →	30	SVC242 →	20
SVC243 →	30	SVC244 →	20
SVC245 →	30	SVC246 →	20
SVC247 →	30	SVC248 →	20
SVC249 →	30	SVC250 →	2

<<3>> SERVICE PARAMETERS

SVC301 →	4	SVC302 →	8
SVC303 →	0	SVC304 →	0
SVC305 →	1	SVC306 →	1
SVC307 →	1	SVC308 →	0
SVC309 →	0	SVC310 →	0
SVC311 →	1	SVC312 →	0
SVC313 →	0.0	SVC314 →	0.0
SVC315 →	0.0		

<<4>> SPECIAL TEST MODES

SVC401	SVC402
SVC403	SVC404
SVC405	SVC406

③ SIGNAL LIST PRINT

- How to operate: After entering Service Mode, press [4] and [START]
- Function : It prints the list about process and result of the most recent transmission.

SIGNAL LIST

NAME :
FCU Ver : F755-F 1.03 (2002.06.24)
ICU Ver : F755-I 1.03 (2002.06.24)

T/R	FCF	FACSIMILE FRAME DATA
T	NSF	FF03286284100800404040404040404040404040404040404040404040404040404040404040404
T	CSI	FF034020202020202020202020202020202020202020202020
T	DIS	FF
R	TSI	FF034220202020202020202020202020202020202020202020
R	DCS	FF138200868800
T	CFR	FF1384
R	EOP	FF132E
T	MCF	FF138C
R	DCN	FF13FA

COMMUNICATION RESULT : O.K.

2) REGULATION PARAMETER

① SVC201 : FAX SENDING LEVEL

Function : It can control output level when sending.

② SVC213, SVC214 : DTMF SIGNAL ON/OFF TIME (unit msec)

Function : It can control DTMF SIGNAL ON/OFF TIME.

③ SVC215, SVC216: DTMF HIGH/LOW GROUP LEVEL

Function : It can control DTMF HIGH/LOW GROUP LEVEL.

④ SVC217 : FLASH RECALL TIME (unit 10msec)

Function : It can control FLASH RECALL TIME.

⑤ SVC218 : 1st DIGIT DELAY TIME (unit 100msec)

Function : It can control FIRST DIGIT DELAY TIME for dialing.

⑥ SVC219 : PAUSE TIME (unit 100msec)

Function : It can control PAUSE TIME between numbers when dialing.

⑦ SVC220 : RECALL COUNT

Function : It can control RECALL COUNT in the automatic sending mode.

⑧ SVC221 : RECALL PAUSE TIME (unit 1min)

Function : It can control PAUSE TIME when recalling.

→ Refer to the following <SERVICE TABLE> for more items, ranges and defaults of PARAMETER.

3) Other EXTENDED OPTION

① SVC301 : CIS SLICE LEVEL

Function : It can control CIS SLICE LEVEL when copying.

② SVC302 : PHOTO CIS SLICE LEVEL

Function : It can control PHOTO CIS SLICE LEVEL when copying in the photo mode.

③ SVC304 : TTI REGISTER CHECK

Function : When Local ID is not registered for sending, you can decide if you send documents. When Local ID is not set up, it is not sent in the ON mode.

④ SVC305 : CALLER ID TYPE

Function: You can set up CALLER ID TYPE.

⑤ SVC311 : WHITE REFERENCE READ

Function : For the REFERENCE SCAN, you can select if you apply with White Reference data. In the ON mode, white data is read, its average value is saved in FLASH RAM, and it is used for Reference Scan. In the OFF mode, White Bar is read and is used for Reference Scan.

⑥ SVC313 : LSU TOP MARGIN

Function : When controlling LSU TOP MARGIN, you can change the setting by using 'LEFT/RIGHT DIRECTION KEY'.

⑦ SVC314 : REG TOP MARGIN

Function : When controlling REG TOP MARGIN, you can change the setting by using 'LEFT/RIGHT DIRECTION KEY'.

⑧ SVC315 : ENGINE LEFT MARGIN

Function : When controlling ENGINE LEFT MARGIN, you can change the setting by using 'LEFT/RIGHT DIRECTION KEY'.

4) SPECIAL TEST OPTION

① SVC401 : SIGNAL LIST

Function : It prints about TRANSMIT PROTOCOL.

② SVC402 : SENSOR TEST

Function : It is used when checking the sensors of documents and recording papers.

③ SVC404 : MOTOR TEST

Function : It is used when checking the motors of sending and receiving.

④ SVC405 : 0 dBm 2100Hz TX TEST

Function : It outputs 2100Hx -0dBm signal.

⑤ SVC406 : DTMF TEST

Function : It is used when checking the output of the continuous DTMF ton.

GROUP	NO	ITEM	RANGES	DEFAULT
2. REGULATION PARAMETERS	01	FAX SENDING LEVEL	0 ~ 15 (dBm)	11
	02	MIN. RING FREQUENCY	13~70(Hz)	13
	03	MAX. RING FREQUENCY	13 ~ 70 (Hz)	70
	04	MIN. SIGNAL ON TIME	15, 20, 25, 90 (x 10ms)	25
	05	MAX. SIGNAL OFF TIME	0 ~ 9 (x 100msec)	6
	06	RING OVER TIME	00~99(sec)	10
	07	PULSE DIAL FORMAT	0:N, 1= N=1, 2=10-N	0
	08	PULSE MAKE TIME	00~99(ms)	39
	09	PULSE BREAK TIME	00~99(ms)	61
	10	PULSE INTERDIGIT TIME	0 ~ 99 (x 100msec)	9
	11	PULSE PRE-PULSING TIME	0 ~ 99 (x 10msec)	2
	12	PULSE POST-PULSING TIME	0 ~ 99 (x 10msec)	2
	13	DTMF SIGNAL ON TIME	00~99(ms)	85
	14	DTMF SIGNAL OFF TIME	00~99(ms)	85
	15	DTMF HIGH LEVEL	00~15(dBm)	10
	16	DTMF LOW LEVEL	00~15(dBm)	13
	17	FLASH RECALL TIME	0 ~ 99 (x 10msec)	10
	18	1ST DIGIT DELAY TIME	0 ~ 99 (x 100msec)	30
	19	PAUSE TIME	0 ~ 99 (x 100msec)	10
	20	RECALL COUNT	0~9	3
	21	RECALL PAUSE TIME	0~9 (min)	3
	22	POLARITY REVERSION(NOT USED)	0 ~ 99 (x 10msec)	0
	23	TONE DETECTION LEVEL	20~47 (dBm)	40
	24	1ST SIGNAL TX DELAY TIME	0 ~ 99 (x 100msec)	40
	25	PSTN DIAL TONE ON/OFF	0=OFF, 1=ON	0
	26	PSTN DIAL TONE TYPE	0=CONTINUANCE, 1=CADENCE 2=CONT&CAD	2
	27	PSTN DIAL TONE FREQ	0=100Hz~550 Hz 1=300 Hz~550Hz 2=300~800Hz	0
	28	PSTN DIAL TONE OVER TIME	0~99 (sec)	8
	29	MIN. DT ON TIME(CONTINUOUS MODE)	0 ~ 99 (x 100msec)	8
	30	MIN. DT ON TIME (CADENCE MODE)	0 ~ 99 (x 10msec)	50
	31	MAX. DT ON TIME (CADENCE MODE)	0 ~ 99 (x 10msec)	70
	32	MIN. DT OFF TIME (CADENCE MODE)	0 ~ 99 (x 10msec)	90
	33	MAX. DT OFF TIME (CADENCE MODE)	0 ~ 99 (x 10msec)	110
	34	CADENCE MODE CYCLES	0~9	1

	35	PSTN MAX LOSS TIME	0 ~ 99 (x 10msec)	7
	36	BUSY DETECT BEFORE	0=OFF, 1=ON	0
	37	BUSY DETECT AFTER	0=OFF, 1=ON	1
	38	1ST BUSY MIN. ON TIME	0 ~ 99 (x 10msec)	20
	39	1ST BUSY MAX. ON TIME	0 ~ 99 (x 10msec)	30
	40	1ST BUSY MIN. OFF TIME	0 ~ 99 (x 10msec)	20
	41	1ST BUSY MAX. OFF TIME	0 ~ 99 (x 10msec)	30
	42	2ND BUSY MIN. ON TIME	0 ~ 99 (x 10msec)	20
	43	2ND BUSY MAX. ON TIME	0 ~ 99 (x 10msec)	30
	44	2ND BUSY MIN. OFF TIME	0 ~ 99 (x 10msec)	20
	45	2ND BUSY MAX. OFF TIME	0 ~ 99 (x 10msec)	30
	46	3RD BUSY MIN. ON TIME	0 ~ 99 (x 10msec)	20
	47	3RD BUSY MAX. ON TIME	0 ~ 99 (x 10msec)	30
	48	3RD BUSY MIN. OFF TIME	0 ~ 99 (x 10msec)	20
	49	3RD BUSY MAX. OFF TIME	0 ~ 99 (x 10msec)	30
	50	BUSY TONE DETECTION CYCLES	0~9	2
3. EXTENDED OPTION PARAMETERS	01	CIS SLICE LEVEL	0~9	5
	02	PHOTO CIS SLICE LEVEL	0~9	5
	03	MONITORING	0=OFF, 1=ON, 2=ERROR	0
	04	TTI REGISTER CHECK	0=OFF, 1=ON	0
	05	CALLER ID TYPE	0=OFF, 1=FSK, 2=DTMF, 3:BOTH 4=BUST	1
	06	TEXT SHADING CORRECTION	0=OFF, 1=ON	1
	07	PHOTO SHADING CORRECTION	0=OFF, 1=ON	1
	08	STANDARD MODE COPY	0=OFF, 1=ON	0
	09	DOC. LENGTH CHECK IGNORE	0=OFF, 1=ON	0
	10	TX OVER TIME CHECK	0=OFF, 1=ON	0
	11	WHITE REFERENCE READ	0=OFF, 1=ON	0
	12	LD ON/OFF	0=OFF, 1=ON POLYGON ON	0
	13	LSU TOP MARGIN	-15 ~ 15 (mm)	0
	14	REG TOP MARGIN	-15 ~ 15 (mm)	0
	15	ENGINE LEFT MARGIN	-15 ~ 15 (mm)	0
	16	PAPER FEEDING MARGIN	-15 ~ 15 (mm)	0
	17	RESPONSE CHECK TIME(TO TIME)	0~99(sec)	60
	18	SCAN SHADE ON/OFF	0=OFF, 1=ON	0
	19	FAN CONTROL TYPE	0=OLD, 1=NEW	1
	20	DIAL METHODE TYPE	0=DTMF, 1=PULSE	0
4. SPECIAL TEST MODES	01	SIGNAL LIST		
	02	SENSOR TEST		
	03	RESERVED		

	04	MOTOR TEST		
	05	0 DBM 2100HZ TONE TX TEST		
	06	DTMF TEST		
	07	MODEM SIGNAL TEST		

< SERVICE TABLE >

2. Error Code

1) Sending Error

Error Code	Problem
#102	In the sending mode, it has no paper to send.
#103	In the sending mode, the other machine you are sending does not answer.
#104	As the telephone circuit is not in a good condition, documents cannot be received.
#106	The wrong signal is sent from the other machine in the previous step of sending.
#109	After completing sending, the confirmation signal is not sent from the machine you are sending.
#110	After competing sending, the receiver does not answer.
#111	After competing sending, The wrong signal is sent from the other machine.
#113	As the received data has so many errors, the receiver requests to try sending it again.
#114	The length is documents is too long. (when it is over 1m)
#115	It takes so long to send a page (when it exceed 8 minutes)

2) Reception Error

Error Code	Problem
#152	In the reception mode, the wrong signal is sent for the machine you are receiving.
#153	During polling reception, you enter the wrong password of the sender.
#154	In the reception mode, the other machine does not answer
#156	The wrong signal is sent from the other machine in the previous step of receiving.
#158	Only non-standard sending signal has got from the other maker.
#159	In the reception mode, image data is not received.
#160	The telephone line is not connected or no signal is sent for the other machine (NO Carrier Error)
#161	The telephone circuit is not connected or no signal is sent for the other machine (EOL time out error)
#162	The received image has been damaged continuously.
#164	After completing the reception, the other machine does not answer.
#166	An error arises on the other machine, or the sender stopped to send.
#167	The received image has been damage so much, not continuously. (The signal is sent the other machine to try sending them again)
#168	During the password reception, you get the wrong password from the other machine.

3) Others Error Code

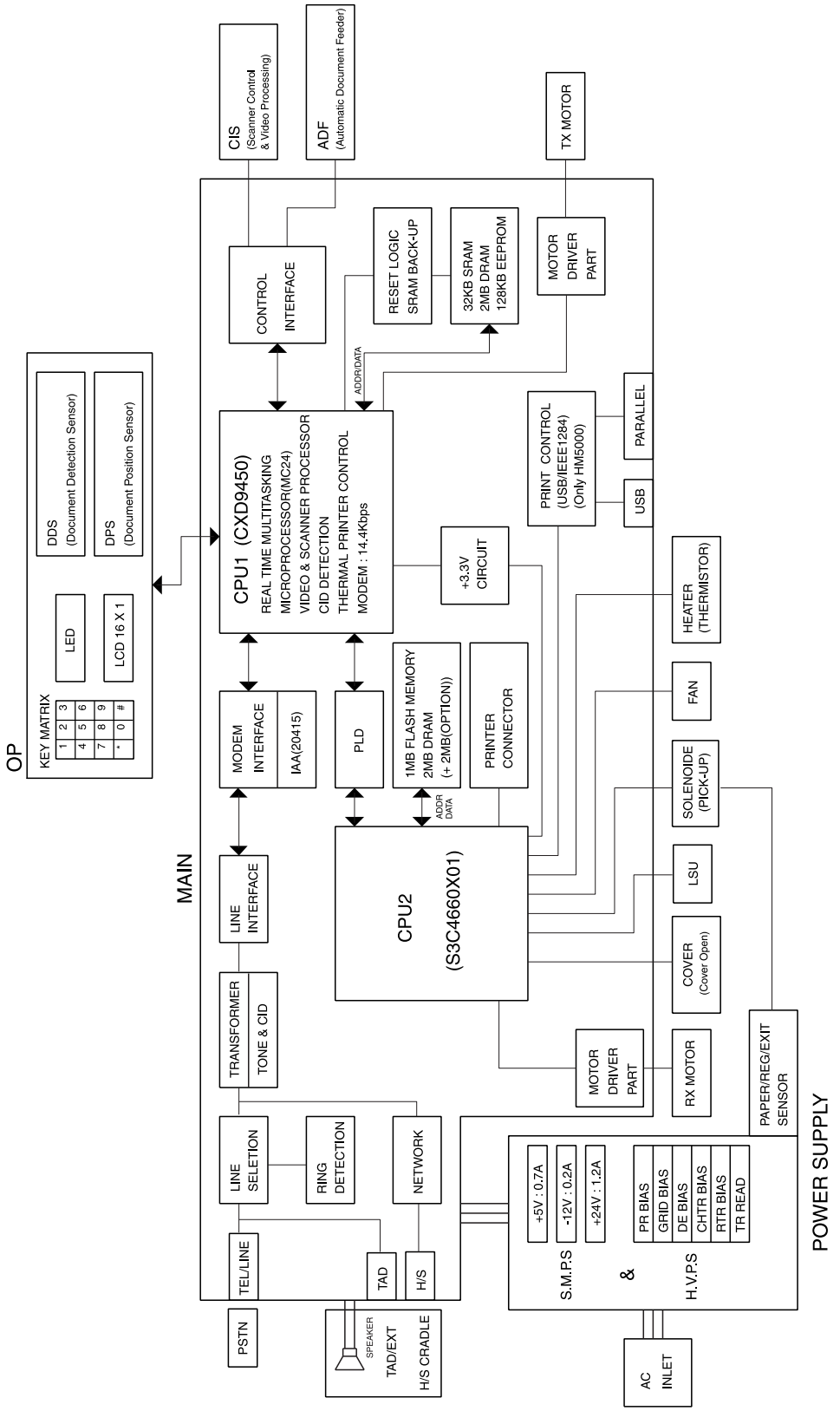
Error Code	Problem
#201	While sending or receiving, you get the signal to inform the wrong procedure.
STOP KEY	While sending or receiving, the user press the STOP key
NO ANSWER	Before sending or receiving, the other person who you want to communicate does not answer.

4. Service Call

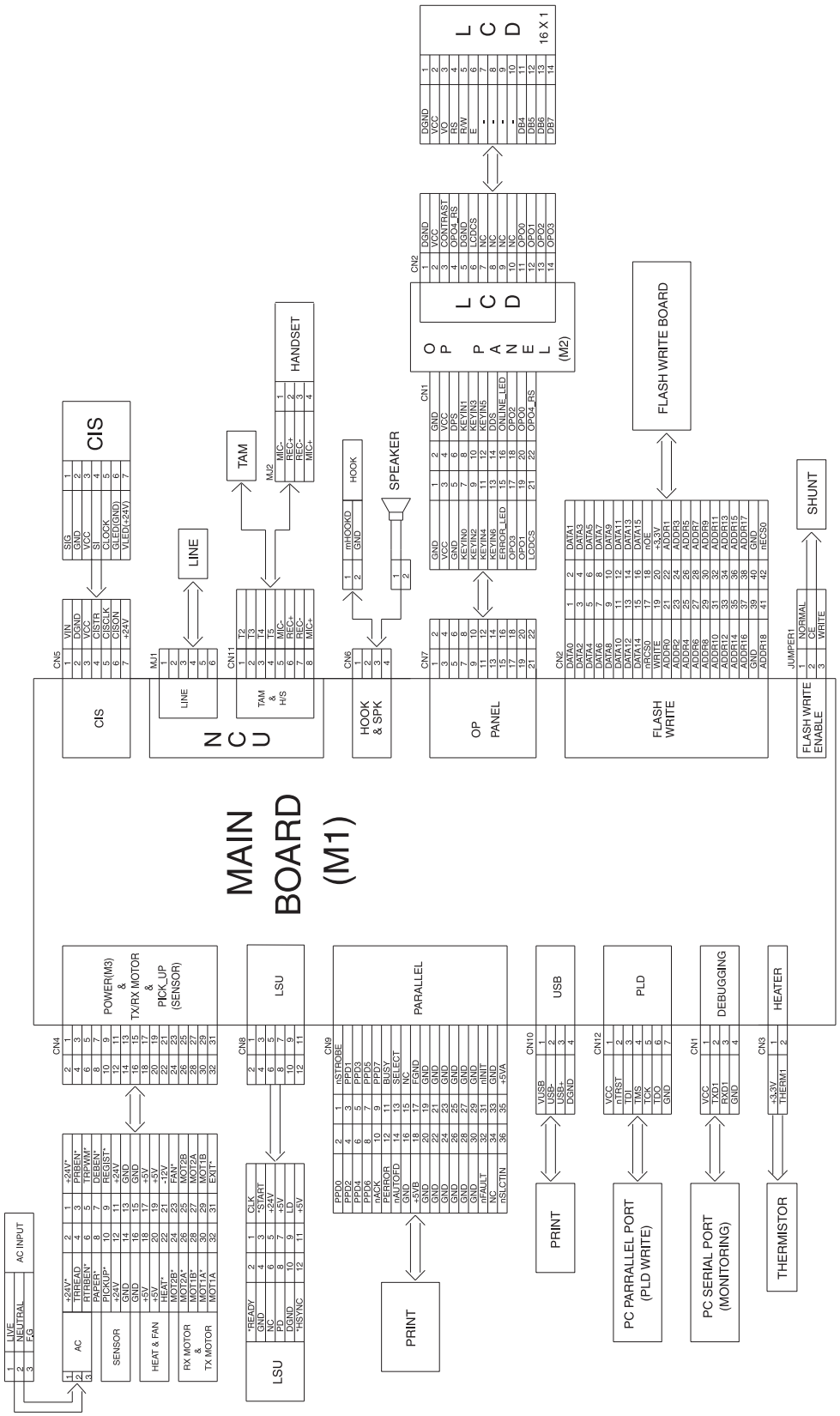
Display on LCD	Phenomenon	Countermeasure / Check Sequence
Service call 0	Communication fails between FCU(Fax Control Unit) and ICU (Image Control Unit).	To replay Main PBA.
Service call 1	The temperature of fusser unit is not controlled, therefore the temperature of fusser unit is high abnormally.	1. To replay thermistor. (If not solved the problem, Go to next step) 2. To replay Main PBA.
Service call 2	The temperature of fusser unit is not controlled, therefore the temperature of fusser unit is low abnormally.	1. To check CN3 harness. (If not solved the problem, Go to next step) 2. To check CN3 contact. (If not solved the problem, Go to next step) 3. To replay thermistor. (If not solved the problem, Go to next step) 4. To replay Main PBA.
Service call 3	Polygon motor is not controlled.	1. To check CN3 harness. (If not solved the problem, Go to next step) 2. To check CN8 contact. (If not solved the problem, Go to next step) 3. To replay LSU module. (If not solved the problem, Go to next step) 4. To replay Main PBA.
Service call 4	Beam detection is not detected.	1. To check CN8 harness. (If not solved the problem, Go to next step) 2. To check CN3 contact. (If not solved the problem, Go to next step) 3. To replay LSU module. (If not solved the problem, Go to next step) 4. To replay Main PBA.

3-4. Block Diagram

1. LPF755 SYSTEM BLOCK DIAGRAM



2. LPF755 CONNECTION BLOCK DIAGRAM



4 Maintenance and Troubleshooting

OKIFAX 4510

4-1. Advance Maintenance and Troubleshooting

The following period is instructions for general maintenance and troubleshooting. It can be changed according to some factors during using. The following period is just for reference.

Parts	*Replacement Period*	
Cartridge	FREE STARTER CARTRIDGE	1,000Sheet
	TONER CARTRIDGE PFA721	3,000Sheet
Pickup (Roller, PAD)	50,000Sheet	
FEED Roller (ADF, Pickup)	50,000Sheet	
Transfer Roller	50,000Sheet	
ADF Roller	50,000Sheet	
Fuser	50,000Sheet	
Driver	50,000Sheet	
Each System of PAD	50,000Sheet	

4-2. The Printing Quality

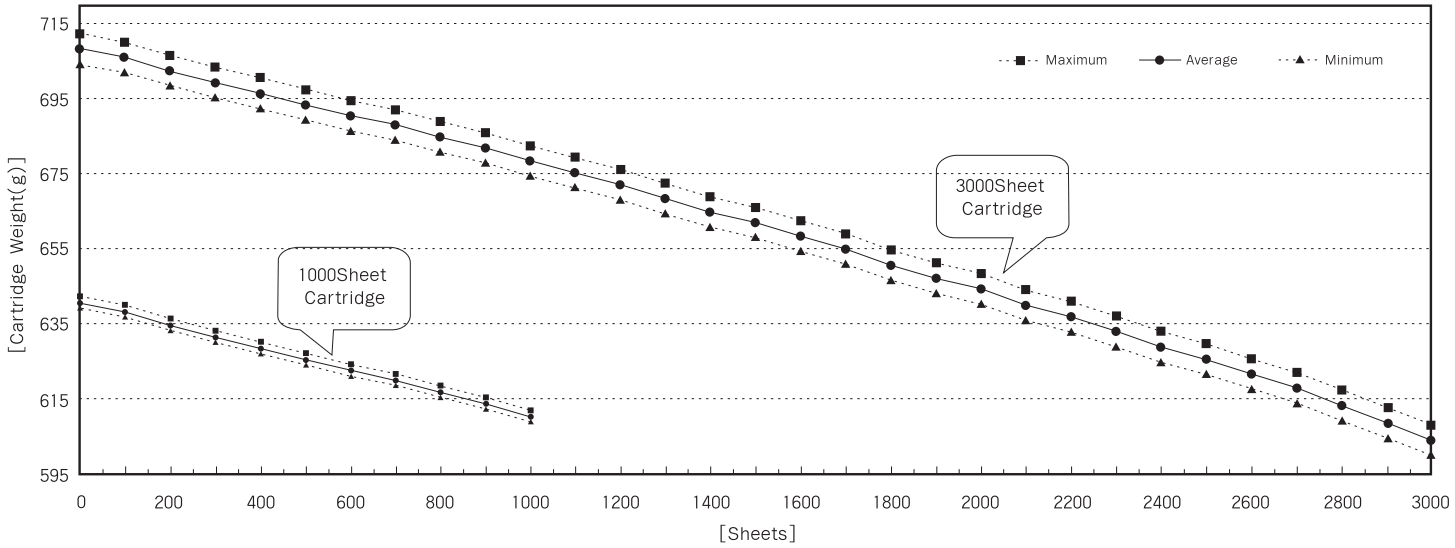
N O	*Roller*	*Print Period*	*Problem of Printing*
1	OPC Drum	75.4	White dot/Black dot on the SOLID
2	Transfer Roller	50.2	Abnormal transfer of black line
3	HEAT Roller	56.5	Black dot, White dot
4	Backup Roller	56.5	Contamination of black side
5	DVP Roller	35	Black dot, period

4-3. TONER Consumption

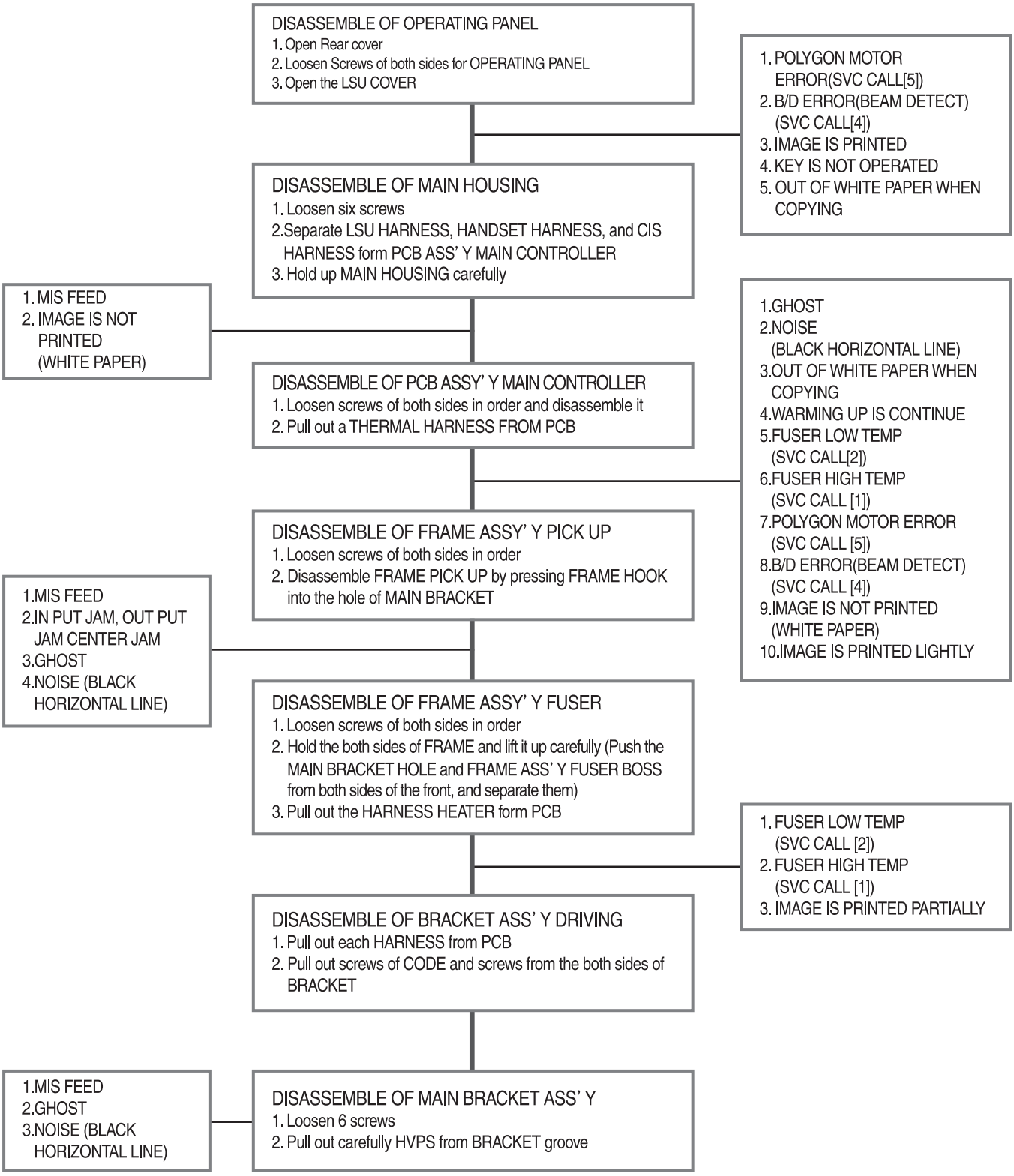
unit : g

Section \ Sheet		0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
3000 sheet	Maximum weight	712.56	710.23	706.65	703.45	700.49	697.47	694.43	691.99	688.77	685.73	682.21	679.14	675.80	672.08	668.39	665.63
	Average weight	708.43	706.10	702.52	699.32	696.36	693.34	690.30	687.86	684.64	681.60	678.08	675.01	671.67	667.95	664.26	661.50
	Minimum weight	704.48	702.15	698.57	695.37	692.41	689.39	686.35	683.91	680.69	677.65	674.13	671.06	667.72	664.00	660.31	657.55
1000 sheet	Maximum weight	642.30	639.97	636.39	633.19	630.23	627.21	624.17	621.73	618.51	615.47	611.95					
	Average weight	640.50	638.17	634.59	631.39	628.43	625.41	622.37	619.93	616.71	613.67	610.15					
	Minimum weight	639.30	636.97	633.39	630.19	627.23	624.21	621.17	618.73	615.51	612.47	608.95					
Consumption		0	2.33	3.58	3.2	2.96	3.02	3.04	2.44	3.22	3.04	3.52	3.07	3.34	3.72	3.69	2.76
The accumulated consumption		0	2.33	5.91	9.11	12.07	15.09	18.13	20.57	23.79	26.83	30.35	33.42	36.76	40.48	44.17	46.93

Section \ Sheet		1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
3000 sheet	Maximum weight	661.88	658.50	654.11	650.62	647.78	643.46	640.40	636.53	632.37	629.19	625.20	621.49	616.80	612.11	607.42
	Average weight	657.75	654.37	649.98	646.49	643.65	639.33	636.27	632.40	628.24	625.06	621.07	617.36	612.67	607.98	603.29
	Minimum weight	653.80	650.42	643.03	642.54	639.70	635.38	632.32	628.45	624.29	621.11	617.12	613.41	608.72	604.03	599.34
1000 sheet	Maximum weight															
	Average weight															
	Minimum weight															
Consumption		3.75	3.38	4.39	3.49	2.84	4.32	3.06	3.87	4.16	3.18	3.99	3.71	4.69	4.69	4.69
The accumulated consumption		50.68	54.06	58.45	61.94	64.78	69.1	72.16	76.03	80.19	83.37	87.36	91.07	95.76	100.45	105.14

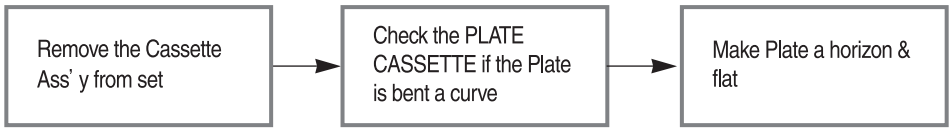


4-4. Disassemble of set


DISASSEMBLE OF OPERATING PANEL
1. Open Rear cover
2. Loosen Screws of both sides for OPERATING PANEL
3. Open the LSU COVER
1. POLYGON MOTOR ERROR(SVC CALL[5])
2. B/D ERROR(BEAM DETECT) (SVC CALL[4])
3. IMAGE IS PRINTED
4. KEY IS NOT OPERATED
5. OUT OF WHITE PAPER WHEN COPYING
DISASSEMBLE OF MAIN HOUSING
1. Loosen six screws
2.Separate LSU HARNESS, HANDSET HARNESS, and CIS HARNESS form PCB ASS' Y MAIN CONTROLLER
3. Hold up MAIN HOUSING carefully
1. MIS FEED
2. IMAGE IS NOT PRINTED (WHITE PAPER)
DISASSEMBLE OF PCB ASSY' Y MAIN CONTROLLER
1. Loosen screws of both sides in order and disassemble it
2. Pull out a THERMAL HARNESS FROM PCB
1.GHOST
2.NOISE (BLACK HORIZONTAL LINE)
3.OUT OF WHITE PAPER WHEN COPYING
4.WARMING UP IS CONTINUE
5.FUSER LOW TEMP (SVC CALL[2])
6.FUSER HIGH TEMP (SVC CALL [1])
7.POLYGON MOTOR ERROR (SVC CALL [5])
8.B/D ERROR(BEAM DETECT) (SVC CALL [4])
9.IMAGE IS NOT PRINTED (WHITE PAPER)
10.IMAGE IS PRINTED LIGHTLY
DISASSEMBLE OF FRAME ASSY' Y PICK UP
1. Loosen screws of both sides in order
2. Disassemble FRAME PICK UP by pressing FRAME HOOK into the hole of MAIN BRACKET
1.MIS FEED
2.IN PUT JAM, OUT PUT JAM CENTER JAM
3.GHOST
4.NOISE (BLACK HORIZONTAL LINE)
DISASSEMBLE OF FRAME ASSY' Y FUSER
1. Loosen screws of both sides in order
2. Hold the both sides of FRAME and lift it up carefully (Push the MAIN BRACKET HOLE and FRAME ASS' Y FUSER BOSS from both sides of the front, and separate them)
3. Pull out the HARNESS HEATER form PCB
1. FUSER LOW TEMP (SVC CALL [2])
2. FUSER HIGH TEMP (SVC CALL [1])
3. IMAGE IS PRINTED PARTIALLY
DISASSEMBLE OF BRACKET ASS' Y DRIVING
1. Pull out each HARNESS from PCB
2. Pull out screws of CODE and screws from the both sides of BRACKET
1.MIS FEED
2.GHOST
3.NOISE (BLACK HORIZONTAL LINE)
DISASSEMBLE OF MAIN BRACKET ASS' Y
1. Loosen 6 screws
2. Pull out carefully HVPS from BRACKET groove

4-5. MIS FEED

- CHECK POINT : PLATE CASSETTE IS BENT
- CHECK PARTS : CASSETTE ASS' Y
- TROUBLESHOOTING



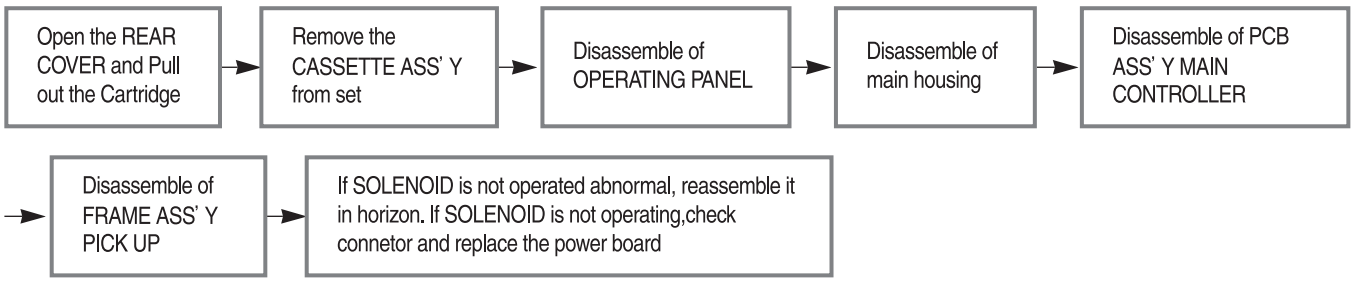
- CHECK POINT : SHEET SAPERATION is not good stick from FRAME PAPER PAD.
- CHECK PARTS : HOUSING PART
- TROUBLESHOOTING

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Stick the SHEET SAPERATION again to FRAME PAPER PAD

- CHECK POINT : Get ROLLER REGIST PINCH out of SPRING REGIST PINCH
- CHECK PARTS : HOUSING PART
- TROUBLESHOOTING

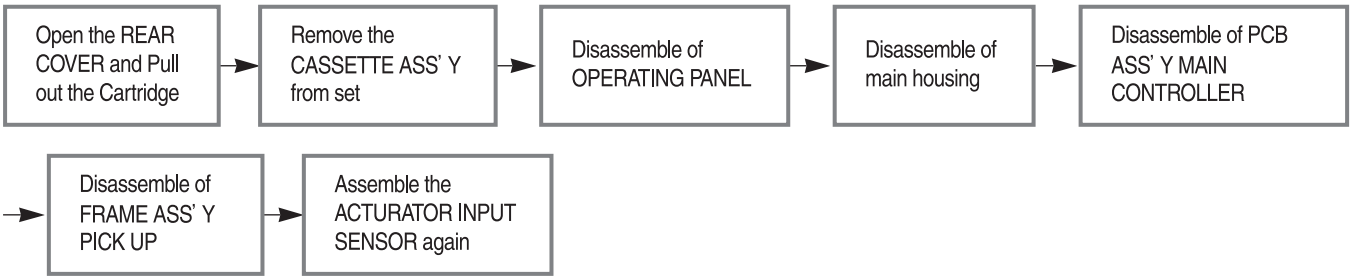
Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Set ROLLER REGIST PINCH in SPRING REGIST PINCH

- CHECK POINT : When paper is picked up, SOLENOID is not operating or abnormal operating
- CHECK PARTS : PICK UP ASS' Y
- TROUBLESHOOTING

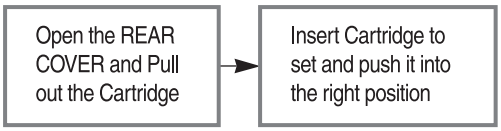

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
If SOLENOID is not operated abnormal, reassemble it in horizon. If SOLENOID is not operating,check connetor and replace the power board

4-6. In put jam , out put jam , Center jam

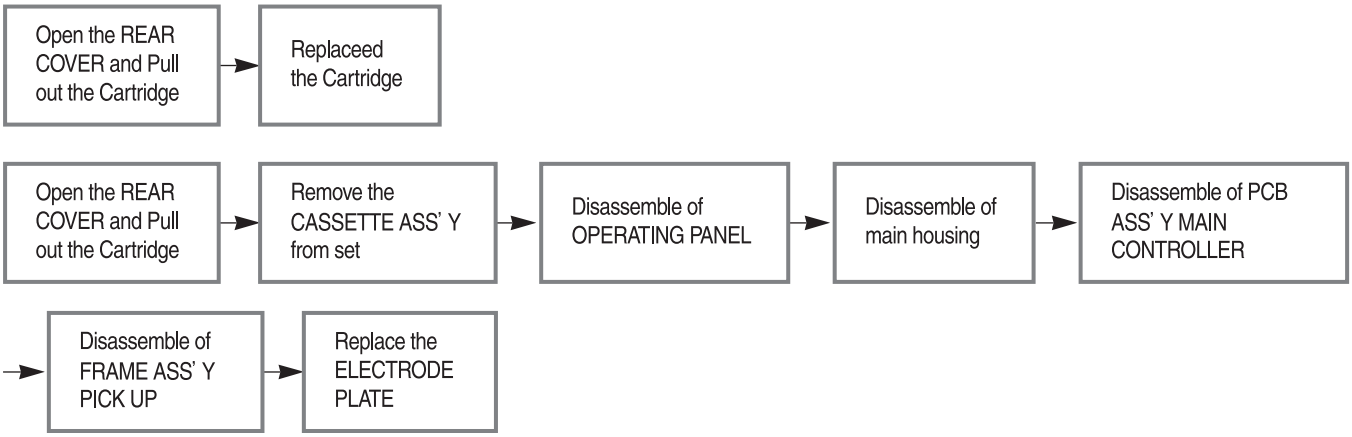
- CHECK POINT : In Put Sensor is not moved
- CHECK PARTS : PICK UP ASS' Y
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Assemble the ACTURATOR INPUT SENSOR again

- CHECK POINT : Cartridge is not installed at right position
- CHECK PARTS : Cartridge
- TROUBLESHOOTING

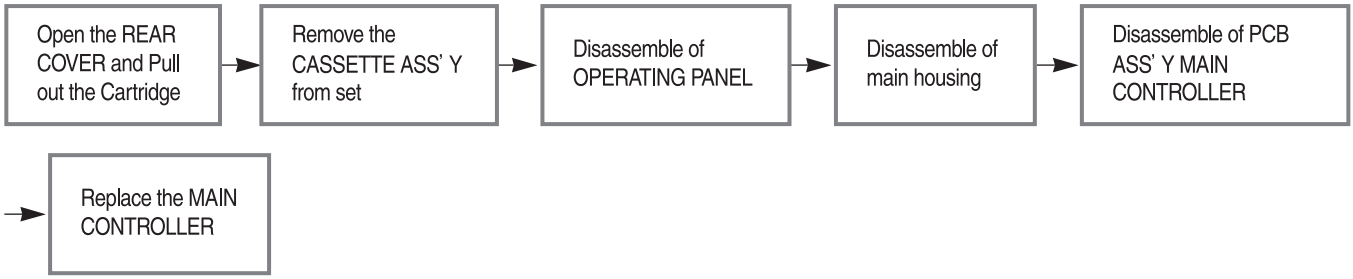


- CHECK POINT : Cartridge trouble, The ELECTRODE PLATE of FRAME PICK UP ASS' Y is bent. (When The print is come out black)
- CHECK PARTS : Cartridge, PICK UP ASS' Y
- TROUBLESHOOTING

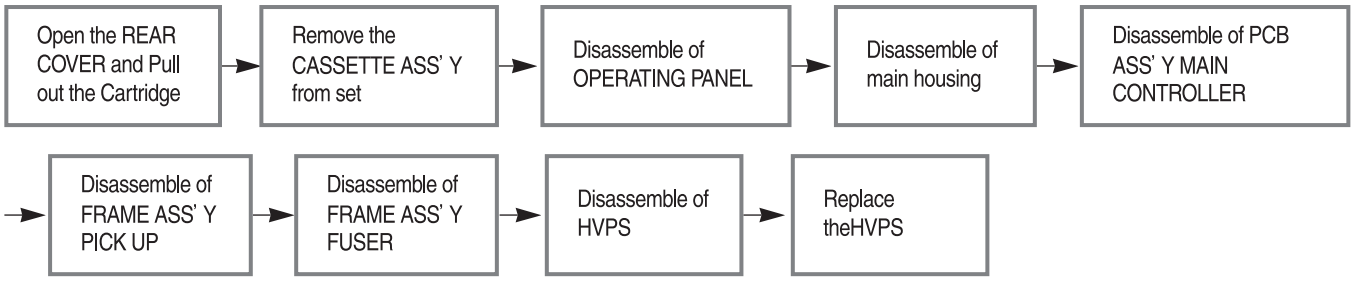

Open the REAR COVER and Pull out the Cartridge
Replaceed the Cartridge
Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Replace the ELECTRODE PLATE

4-7. GHOST & NOISE(BLACK HORIZONTAL LINE)

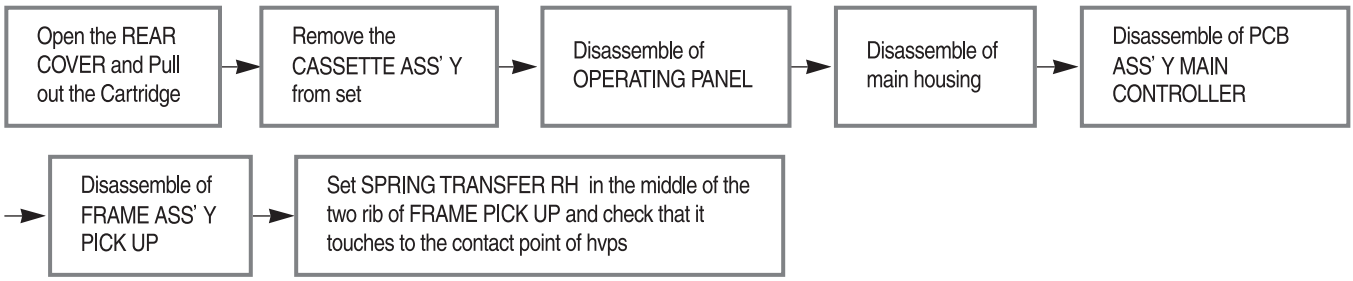
- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER

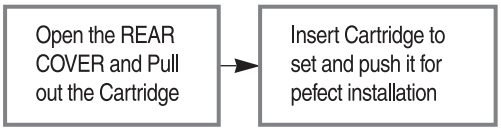
- CHECK POINT : HVPS trouble
- CHECK PARTS : HVPS
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Disassemble of FRAME ASS' Y FUSER
Disassemble of HVPS
Replace theHVPS

- CHECK POINT : SPRING TRANSFER RH is located irregular postiton and it is not touched the contact point of hvps
- CHECK PARTS : PICK UP ASS' Y
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Set SPRING TRANSFER RH in the middle of the two rib of FRAME PICK UP and check that it touches to the contact point of hvps

- CHECK POINT : Cartridge is not wholly installation
- CHECK PARTS : Cartridge
- TROUBLESHOOTING



4-8. Out of white paper when copying

- CHECK POINT : Shading is not executed.
- CHECK PARTS : software
- TROUBLESHOOTING

SHADING APPLY

SEQUENCE : MENU KEY 2 TIMES -> KEY (→→) 3 TIMES(3TIMES TOUCH WITHIN 1SECOND) → DIAL 7,7,4,9,3 -> START KEY 1 TIME → DIAL 1,1 → INSERT WHITE PAPER(A4) TO ADF → SVC NO<11>=1 → START KEY

- CHECK POINT : CIS HARNESS is not connected MAIN CONTROLLER BOARD
- CHECK PARTS : CIS HARNESS
- TROUBLESHOOTING

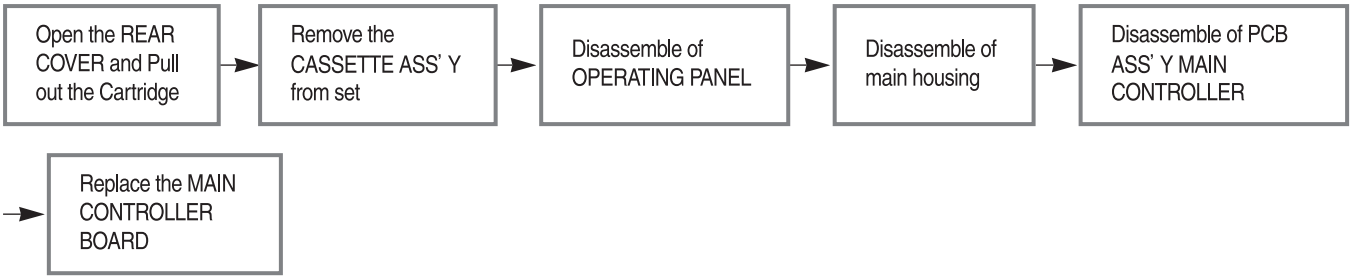
Open the REAR COVER and Pull out the Cartridge → Disassemble of OPERATING PANEL → Re-assemble CIS HARNESS

- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

Open the REAR COVER and Pull out the Cartridge → Remove the CASSETTE ASS' Y from set → Disassemble of OPERATING PANEL → Disassemble of main housing → Disassemble of PCB ASS' Y MAIN CONTROLLER → Replace the MAIN CONTROLLER BOARD

4-9. Warming up is continue

- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

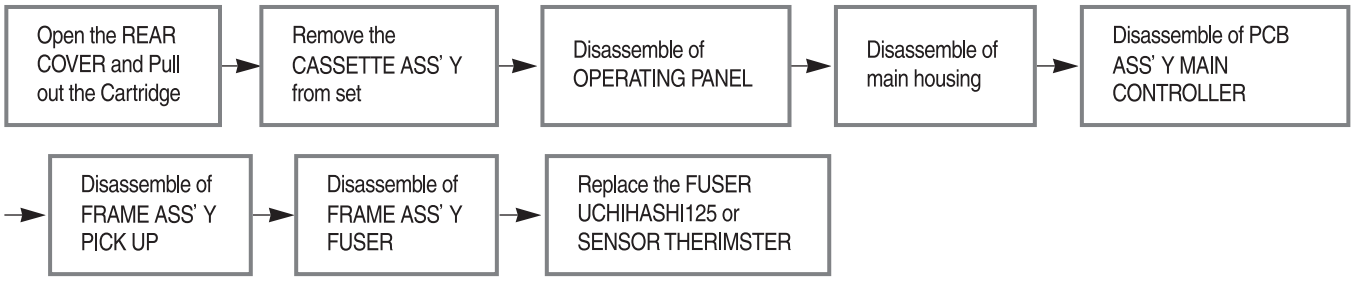

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER

4-10. Fuser Low Temp (SVC Call[2])

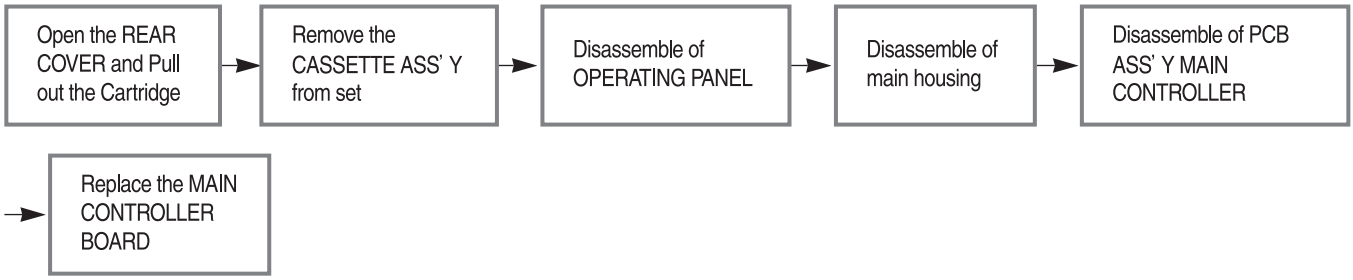
- CHECK POINT : THERMISTER is not connected to the MAIN CONTROLLER BOARD
- CHECK PARTS : SENSOR THERMISTER
- TROUBLESHOOTING

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Connect the SENSOR THERMISTER to MAIN CONTROLLER BOARD

- CHECK POINT : Short of FUSER UCHIHASHI125 or SENSOR THERMISTER
- CHECK PARTS : FUSER UCHIHASHI125, SENSOR THERIMSTER
- TROUBLESHOOTING

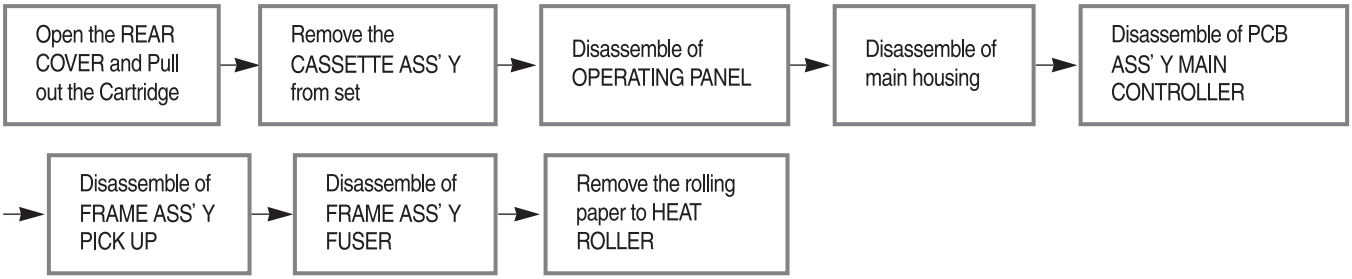

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Disassemble of FRAME ASS' Y FUSER
Replace the FUSER UCHIHASHI125 or SENSOR THERIMSTER

- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

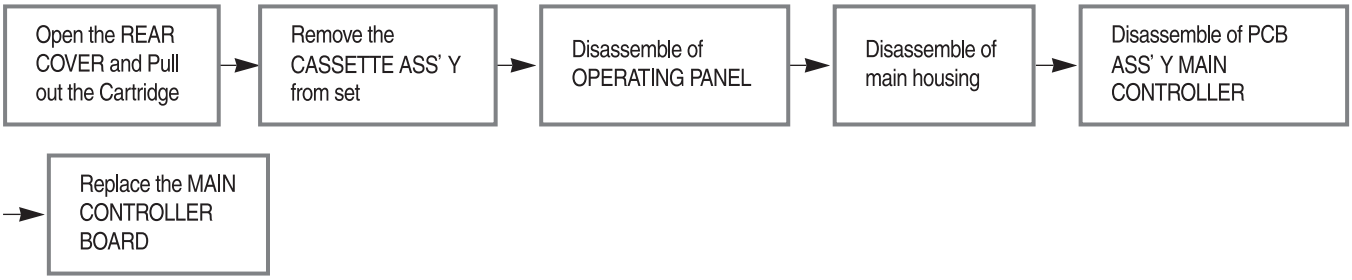

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER BOARD

4-11. Fuser HIGH Temp (SVC Call[1])

- CHECK POINT : Paper is rolled to HEAT ROLLER
- CHECK PARTS : ROLLER HEATER
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Disassemble of FRAME ASS' Y FUSER
Remove the rolling paper to HEAT ROLLER

- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

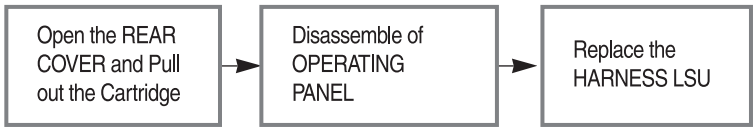

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER BOARD

4-12. POLYGON MOTOR ERROR (SVC Call[5]) & B/D ERROR(BEAM DETECT)(SVC Call[4])

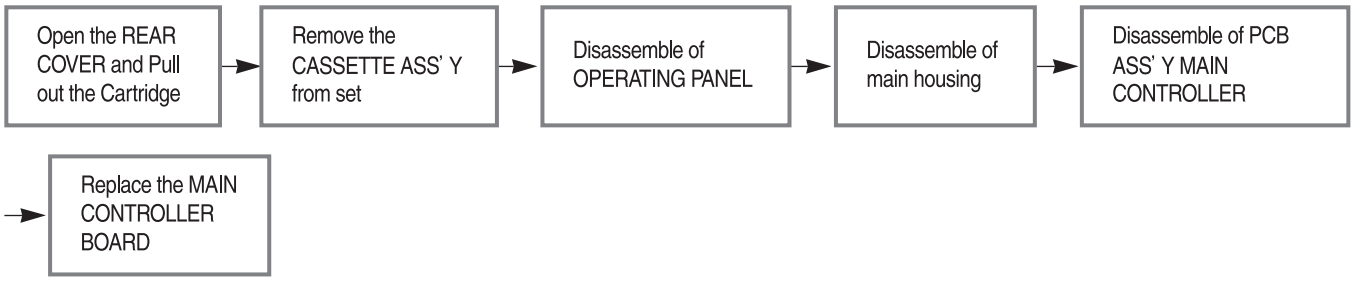
- CHECK POINT : HARNESS LSU is not connected to the MAIN CONTROLLER BOARD
- CHECK PARTS : HARNESS LSU
- TROUBLESHOOTING

Open the REAR COVER and Pull out the Cartridge
Disassemble of OPERATING PANEL
Connect the HARNESS LSU to MAIN CONTROLLER BOARD

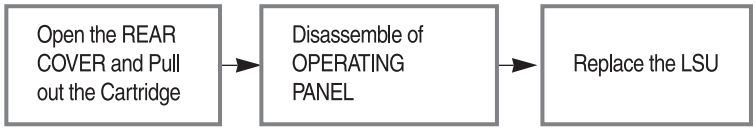
- CHECK POINT : Short of HARNESS LSU
- CHECK PARTS : HARNESS LSU
- TROUBLESHOOTING



- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER BOARD

- CHECK POINT : LSU trouble
- CHECK PARTS : LSU
- TROUBLESHOOTING

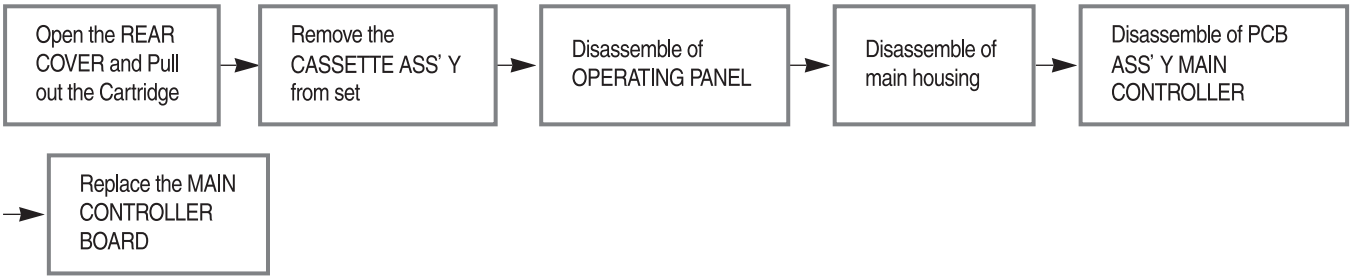


4-13. IMAGE IS NOT PRINTED(WHITE PAPER)

- CHECK POINT : ELECTRODE PLATE OPC GND was not connected to the Cartridge drum GND
- CHECK PARTS : ELECTRODE PLATE OPC GND(MAIN HOUSING)
- TROUBLESHOOTING

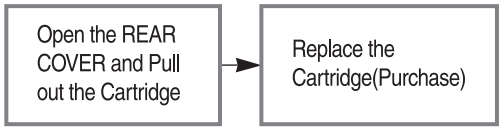
Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Repair and replace the OPC GND

- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

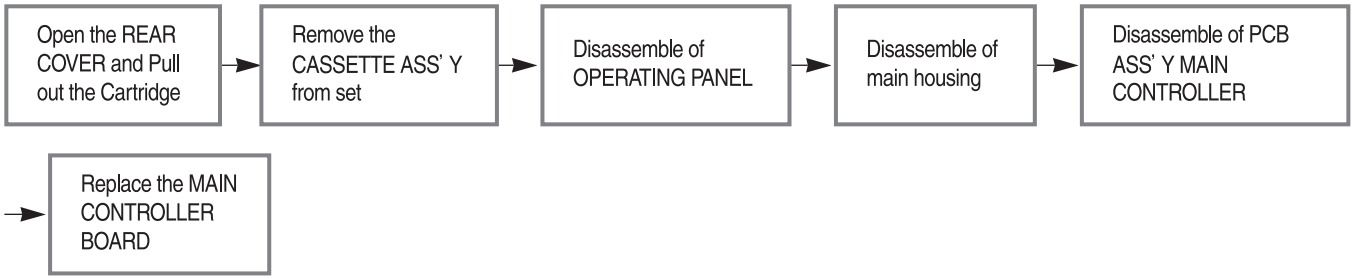

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER BOARD

4-14. IMAGE IS PRINTED LIGHTLY

- CHECK POINT : TONER IN CARTRIDGE USE UP
- CHECK PARTS : CARTRIDGE
- TROUBLESHOOTING



- CHECK POINT : MAIN BOARD trouble
- CHECK PARTS : MAIN BOARD
- TROUBLESHOOTING

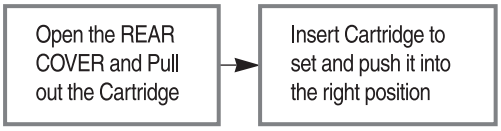

Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Replace the MAIN CONTROLLER BOARD

- CHECK POINT : CIS LEVEL IS LOWER
- CHECK PARTS : SOFTWARE
- TROUBLESHOOTING

SEQUENCE : MENU KEY 1 TIME ->KEY (→→) 3 TIMES (3TIMES TOUCH WITHIN 1 SECOND) ->DIAL 7,7,4,9,3 -> START KEY 1 TIME -> DIAL 1 -> START KEY -> TO RISE THE VALUE PRESS THE DIAL(5 : SETTING VALUE)

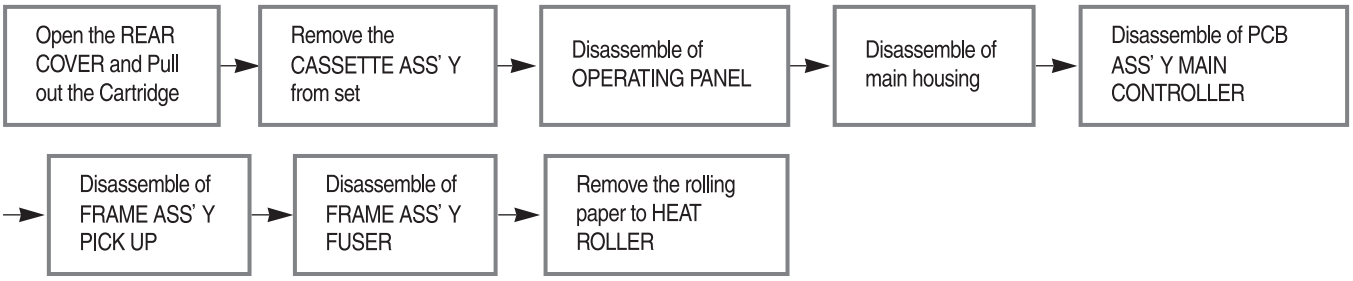
4-15. IMAGE IS PRINTED PARTITALLY

- CHECK POINT : Cartridge is not installed at right position
- CHECK PARTS : Cartridge
- TROUBLESHOOTING



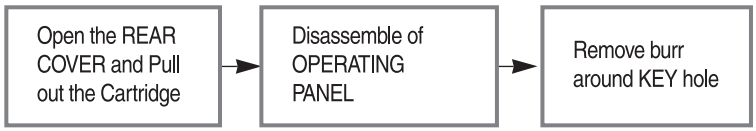
- CHECK POINT : MIRROR is polluted
- CHECK PARTS : MIRROR(MAIN HOUSING)
- TROUBLESHOOTING

- CHECK POINT : A bit of Paper is rolled to HEAT ROLLER
- CHECK PARTS : ROLLER HEATER
- TROUBLESHOOTING


Open the REAR COVER and Pull out the Cartridge
Remove the CASSETTE ASS' Y from set
Disassemble of OPERATING PANEL
Disassemble of main housing
Disassemble of PCB ASS' Y MAIN CONTROLLER
Disassemble of FRAME ASS' Y PICK UP
Disassemble of FRAME ASS' Y FUSER
Remove the rolling paper to HEAT ROLLER

4-16. KEY IS NOT OPERATED

- CHECK POINT : KEY is caught in COVER OPERATING PANEL
- CHECK PARTS : OPERATING PANEL
- TROUBLESHOOTING



4-17. IMAGE IS PRINTED BY PARALLEL PORT

- CHECK POINT : PC and PRINTER is not connectes by PRINT CABLE
- CHECK PARTS : PRINT CABLE
- TROUBLESHOOTING

PC and PRINTER connect with PRINT CABLE

- CHECK POINT : The driver has not been installed
- CHECK PARTS : Driver
- TROUBLESHOOTING

Reinstall the printer driver

- CHECK POINT : Printing to Port Select USB
- CHECK PARTS : Print to the Following port
- TROUBLESHOOTING

Select a port in LPT1

SEQUENCE : ①Click **Start**, point to **Settings**, and then click **Printers**
②Click '**Prix Px-820M Printer**' in Printers Click **File** and then click **Properties**
③Click the **Details** tab and the '**Print to the following port**' to find the port and select the printer port.
④Click **OK**

4-18. IMAGE IS PRINTED BY USB PORT

- CHECK POINT : PC and PRINTER is not connectes by USB CABLE
- CHECK PARTS : USB CABLE
- TROUBLESHOOTING

PC and PRINTER connect with USB CABLE

- CHECK POINT : The driver has not been installed
- CHECK PARTS : Driver
- TROUBLESHOOTING

Reinstall the printer driver

- CHECK POINT : Printing to Port Select Parallel
- CHECK PARTS : Print to the Following port
- TROUBLESHOOTING

Select a port in LPT1

SEQUENCE : ①Click **Start**, point to **Settings**, and then click **Printers**
②Click '**Prix Px-820M Printer**' in Printers Click **File** and then click **Properties**
③Click the Details tab and the '**Print to the following port**' to find the port and select the printer port.
④Click **OK**

4-19. The Checkup and Settlement of Electrical Problems

1. Introduction

This consists of "Checkup and Settlement for SET and BOARD". When the product does not work, refer to the "Checkup and Settlement for SET" first. And then if you still have any problem, see the "Checkup and Settlement for BOARD".

2. Checkup and Troubleshooting for SET

■ When the product never works

Check up	Settlement
· Is the electricity connected correctly?	- Connect well PLUG to the power source.
· Is the voltage right?	- Check the voltage (220V)
· Is CN4 connected correctly to MAIN PCB?	- Connect CN4 correctly.
· Connect just CN4 and CN7 of MAIN PCB to the power source.	- Check that message show correctly on the LCD.

■ When document is not sent correctly

- When document is not sent, even by pressing START/COPY

Check up	Settlement
Is the DODULAR JACK connected well?	Connect the LINE MODULAR JACK to the extension terminal.
Put the handset correctly again, before starting START/COPY	Press START /COPY button before putting the handset down.
Is the sending documents jammed at the scanned part?	Try to insert the sending documents again
Is MAIN-CN7 connected well?	Check MAIN-CN7.
Is MAI-CN4 connected well?	Check MAIN-CN4
Is it made short between PINS of MIN-U24?	Check MAIN-U24.
Is the receiver connected?	Check the receiver' s FAX.

- When documents do not enter, even though put them on the machine

Check up	Settlement
Is paper the proper size for sending?	Check the size of paper.
Is paper stuck in by stapler or clip?	Put documents after removing stapler or clip.
Does DDS(Document Detection Sensor) recognize documents?	Check MAIN-CN7.
Is REAR COVER open?	Check REAR COVER.

■ When documents are not received

- When document are not received in the receiving mode or by pressing START/COPY

Check up	Settlement
Is documents left on the fax?	Press [Cancel] button and remove documents.
Does LCD show "OUT OF PAPER"?	Insert the new papers.
Does LCD show "PAPER JAM"?	Remove the jammed paper.
Does LCD show "SERVICE CALL ERROR"	- Check LSU. - Unplug the cord and connect again in 5 minutes.
Does LCD show "COVER OPEN"?	Close correctly REAR COVER.
Does the fax work for other operations?	- Check that the machine print the received data by memory. - Check that it copies documents.
Is MODULART JACK connected correctly?	Connect LINE MODULAR JACK to the extension terminal.
Is the fax connected to the sender?	Check the sender' s FAX.

■ When it does not copied even by pressing START/COPY

Check up	Settlement
Is the paper size proper for sending?	Check the paper size.
Are documents stuck in by stapler or clip?	Put documents after removing stapler or clip.
Does LCD show " CHECK DOCUMENT" ?	Check if there are papers.
-Does LCD show "OUT OF PAPER" ? -Does LCD show "PAPER JAM" ?	- Put new papers into the ASF and set up it. - Remove the jammed paper.
Does LCD show "SERVICE CALL ERROR" ?	- Check the LSU. - Unplug the cord and connect again in 5 minutes.
Does LCD show "COVER OPEN" ?	Close well REAR COVER.
Does white paper come out for copying?	- Check that LED of CIS turns on during copying - Check that CIS CONNECTOR is correctly connected. - Check that HARNESS is connected to MAIN-CN5 properly. - Check the MAIN-U31, U14. - Check the LSU. - Check the quantity of toner by printing the list.

■ When paper does not come out

Check up	Settlement
Is paper jammed?	Open REAR COVER, pull out the toner cartridge, and remove the jammed paper.
Even though papers are supplied, doesn' t MOTOR drive?	Check that MAIN-CON4 is connected properly.
Does LCD show "SERVICE CALL ERROR" ?	- Check the LSU. - Unplug the cord and connect again in 5 minutes.

3. Checkup and Troubleshooting for BOARD

■ Diagnosis for MAIN PART

- When the power does not come in

NO	Check up	Settlement
1	Is the POWER(+5V) of CN4 normal?	Check the POWER SUPPLY.
2	Is CN7 CONNECTOR right?	Check the OP PANEL.
3	Does +3.3V come out from 2 PIN of MAIN-U3, U19 normally?	Check MAIN-U3, U19.
4	Does the signal come out from 75 PIN(mRAMCS) of MAIN-U2 normally?	Check MAIN-U2 (ENGINE). Check MAIN-U11 (SRAM).
5	Does the signal come out A[0..16], D[0..7] of MAIN-U2 normally?	Check MAIN-U2 (ENGINE). Check MAIN-U11 (SRAM). Check MAIN-U8 (DRAM)
6	Does the signal come out from 160 PIN(SXOUT) of MAIN-U2 normally?	Check Y1(32.256KHz). Check R17, C18, C19, C20, L2.
7	Does the signal come out from 73 PIN(XOUT) of MAIN-U2 normally?	Check Y2 (32.768 KHz). Check R20, C16, C17.
8	Does the signal come out from 61 PIN(LCDCS) of MAIN-U2 normally?	Check MAIN-U2 (ENGINE). Check 21 PIN of MAIN-CN7.
9	Does +5V come out from 4 PIN of MAIN-CN7 normally?	Check CN7 CONNECTOR.

- When ERROR & ONLINE LED does not light up

NO	Check up	Settlement
1	Is POWER(+5V) of CN4 normal?	Check the POWER SUPLLY.
2	Is CN7 CONNECTOR right?	Check the OP PANEL.
3	Does the signal come out from 15(ERROR_LED) PIN and 16(ONLINE_LEC) of CN7?	Check CN7 CONNECTOR.
4	Does the signal come out from 124(ERROR_LED) PIN and 125(ONLINE_LEC) of MAIN-U2 normally?	Check MAIN-U2.
5	Does the signal show on the 17-20 PIN of CN7?	Check the connection parts for 96-100 PIN of MAIN-U2.
6	Is all of the signal normal?	Replace LED of OP B/D.

- When LED does not work

NO	Check up	Settlement
1	Is POWER(+5V) of CN4 normal?	Check the POWER SUPLLY.
2	Is CN7 CONNECTOR right?	Check the OP B/D.
3	Does +5V come out from 3 PIN of CN7 normally?	Check CN7 CONNECTOR.
4	Does the signal come out from 61 PIN (LCDCS) of MAIN-U2 normally?	Check MAIN-U2.
5	Does the signal show on the 17-20 PIN(OPO SIGNAL) of CN7?	Check the connection parts for 96-100 PIN of MAIN-U2.
6	Does the signal show on the 21 PIN of CN7?	Check the connection parts for
7	Does LCDCS signal of OP come out normally?	Replace LCD CONNECTOR.

- When CLOCK is mis-operated

1) Main system clock (32.256 MHz)

NO	Check up	Settlement
1	Is +3.3V normal?	Check the POWER SUPPLY.
2	Is 32.256 HMz input in the 160 PIN of MAIN U2?	-Check MAIN-U2. -Check R17, R18, C18, C19, C20, L2.

2) RTC clock (32.768KHz)

NO	Check up	Settlement
1	Is +3.3V normal?	Check the POWER SUPPLY.
2	Is 32.768 HMz input in the 73 PIN of MAIN U2?	-Check MAIN-U2. -Check R20, C16, C17.

3) CIS clock (500KHz)

NO	Check up	Settlement
1	Does 500 KHz come out from 115 PIN of MAIN-U2?	- Check MAIN-U2. - Check 5 PIN of MAIN-CN5. - Check HARNESS of CIS MODULE.

- Is it printed well?

NO	Check up	Settlement
1	Does RESET SIGNAL come out from MAIN-U14?	Check 140 PIN(CPU2_RESET) of MAIN-U2.
2	Does DMA(Direct Memory Access) work during copying?	- Check 115, 116 PIN of MAIN-U2. - Check 199, 200 PIN of MAIN-U14. - Check MAIN-U31.
3	Is the serial communication of MAIN-U2 and MAIN-U14 made during printing the received DATA?	- Check 193, 194 PIN of MAIN-U14.

- When TM MOTOR does not drive, even though document are input

NO	Check up	Settlement
1	Does DDS(MAIN-CN7 14PIN) become into HIGH?	- Check 2 PIN(+3.3V) of MAIN-U3. - Check CONNECTOR of MAIN-CN7 and HARNESS. - Check MAIN-R151, R163. - Check 51 PIN of MAIN-U2.
2	Does +24V of MAIN-CN4 come out?	- Check MAIN-CN4.
3	Does the mTM[0···3] signal of MAIN-CN4 come out?	- Check TM[0···3] 166-169 PIN of MAIN-U2. - Check that +24V is supplied inn MAIN-24. - Check the INPUT for 1,, 2, 6, 7, PIN of MAIN-U24. - Check the OUTPUT for 16, 15, 11, 10 PIN of MAIN-U24. - Check MAIN-CN4 and HARNESS. - Check TX MOTOR.

- When CIS LED does not work during copying or sending

NO	Check up	Settlement
1	Is it in the LOW LEVEL of MAIN-CN5 6PIN?	- Check CONNECTOR of MAIN-CN5 and HARNESS. - Check Q9, R139, R140. - Check 116 PIN of MAIN-U2.
2	Is 3 PIN of MAIN CN4 in the +5V LEVEL?	- Check MAIN-CN5.

- When documents are not copied

1) When SERVICE LSIT is printed

NO	Check up	Settlement
1	Does 500KHz come out from 115 PIN(CISCLK) of MAIN-U14?	Refer to the settlement of CIS CLOCK parts.
2	Does the signal come out from 118 PIN(CISCLK) of MAIN-U2?	-Check MAIN-U2. -Check 4 PIN of MAIN-CN5.
3	Does the signal come out from 84 PIN(VIN) of MAIN-U2?	-Check CONNECTOR of MAIN-CN5 and HARNESS. -Check 1 PIN of MAIN-CN5. -Check HARNESS of CIS MODULE.

2) When even SERVICE LIST is not printed

NO	Check up	Settlement
1	Does the signal come out from 199, 200 PIN of MAIN-U14?	- Check 42, 49 PIN of MAIN-U2. - Check MAIN-U31 - Check LSU.

3) When it is not multi-copied

NO	Check up	Settlement
1	Does 500KHz come out from 115 PIN of MAIN-U2?	Refer to the settlement of CIS CLOCK parts.
2	Does the signal come out from 70 PIN of MAIN-U2?	- Check 14 PIN of MAIN-U8. - Check that +3.3V of MAIN-U8 is supplied. - Check mRAS, mCAS0, mCAS1. - Check A[0…9], D[0…15] - Check R41, R43, R44, R45, R47, R50, R51, R52, R53, R54.

- When document are not sent or received

NO	Check up	Settlement
1	Is 0dB 2100Hz of modem test mode sent out in the service mode?	Check that TEL LINE is set up correctly.
2	Does TAX come out normally?	- Check 1 PIN of MAIN-U7. - Check 17 PIN(TXOUTP) of MAIN-U1. - Check 146 PIN(SOUT) of MAIN-U2. - Check MAIN-T2. - Check that MAIN-K1 is transferred. - Check MAIN-MJ1.
3	Does RXA come out normally?	Check MAIN-U5, U9.

- When BEEP/RING sound is not variable

NO	Check up	Settlement
1	Does 4 PIN signal of MAIN-CN6 come out?	- Check 5 PIN of MAIN-U13. - Check 1, 2, 4, 5 PIN of MAIN-U10. - Check R61, R62, R63, R65. - Check the SPEAKER.

- When OP PANEL KEY has trouble

NO	Check up	Settlement
1	Is the power supplied from power supply to OP normally?	Check the POWER INPUT of MAIN-CN4.
2	Is OPO[0..4] of MAIN-U2 low periodically?	Check MAIN-U2 and OP B/D.
3	Is KEYIN[0..6] of MAIN-CN7 low during pressing KEY.	Check OP PANEL B/D> Check MAIN-U2, U28.
4	Is +5V normal in the 3, 4 PIN of MAIN-CN 7?	Check MAIN-U2. Check CONNECTOR of MAIN-CN7 and HARNESS.

- When the error lamp is continuously lighted up, even though papers are replaced

NO	Check up	Settlement
1	Is REAR COVER open?	Close REAR COVER tightly.
2	Does SW1 become into HIGH(24V) ->LOW when closing COVER?	Check MAIN-SW1. Check MAIN-CN4.

- When OFF HOOK is not recognized, during picking up the HANDSET

NO	Check up	Settlement
1	Is it high level in 1 PIN of MAIN-CN6?	Check-U19(3.3V).
2	Is it low level in 142 PIN of MAIN-U2(mHOOKD signal)?	Check 142 PIN of MAIN-U2.

■ Troubleshooting of NCU PART

NO	Check up	Settlement
1	When it is not converted into FAX	Check MAIN-K1, U33, Q10, Q11.
2	When DIAL TONE is not heard even by pressing ON-HOOK button	Check MAIN-K1. Try to make the electrical volume variable in the OP PANEL.
3	When SENDING and RECEIVING do not work	Refer to No. 1 Check TX, RX PART of MAIN.
4	When AUTO START does not work	Refer to No. 3. Check MAIN-Q10, Q11, Q12.
5	When DP DIALING does not work during using TEN KEY	Check OP PANEL. Check MAIN-Q10, Q11, Q12.
6	When DTMF DIAL does not work during using TEN KEY	Check OP PANEL. Refer to No. 5
7	When the telephone does not work	- Check TEL LINE MODULER JACK. - Check MAIN-U35, K1. - Check HARNESS within HANDSET.
8	When any sounds are not transmitted with RX-UNIT	- Check MAIN-U35. - Check HARNESS within RX-UNIT.
9	When RING SOUND is not heard	- Check MAIN-U32, ZD3, ZD4, CM2, R219, D12. - Try to make the electrical volume variable.
10	When it is not transferred to HANDSET after the ON-HOOK	- Check MAIN-K1, U33, Q10, Q11. - Refer to No. 7

■ Troubleshooting of OP PCB

- When LED is not lighted up

NO	Check up	Settlement
1	Is 3, 4 PIN POWER(+5V) of CN7 normal?	- Check the POWER SUPLLY. - Check CONNECTOR of CN7 and HARNESS.
2	Is CN7 CONNECTOR right?	Check the OP PANEL.
3	Does the signal come out from 15(ERROR_LED), 16(ONLINE_LED) of CN7?	Check the signal to change from HIGH to LOW.

- When LCD does not work

NO	Check up	Settlement
1	Is 3 PIN POWER(+5V) of CN7 normal?	- Check the POWER SUPLLY. - Check CONNECTOR of CN7 and HARNESS.
2	Is CONNECTOR CN7 right?Check the OP PANEL.	Check the OP PANEL.
3	Does the signal come out from 21 PIN LCDCS of CN7?	- Check the signal to change from LOW to HIGH. - Check 61 PIN of MAIN-U2. - Check 3, 4 PIN +5V of CONNECTOR CN7. - Check 17, 18, 19, 20, 22 PIN.

- When OP PANEL KEY has a problem

NO	Check up	Settlement
1	Is the power supplied normally from POWER SUPPLY to OP?	- Check 3, 4 PIN +5V of CONNECTOR CN7.
2	Is OPO[0···4] of CONNECTOR CN7 low periodically?	Check MAIN-U2 and the OP(B/D).
3	Is KEYIN[0···6] of CONNECTOR CN7 low during pressing KEY?	- Check OP PANEL B/D. - Check CN7 CONNECTOR and HARNESS.

5 Disassemble and Assemble

OKIFAX 4510

5-1. Precautions for Replacement of Parts

❖ Before you disassemble the product to repair or replace parts, please carry out the following directions.

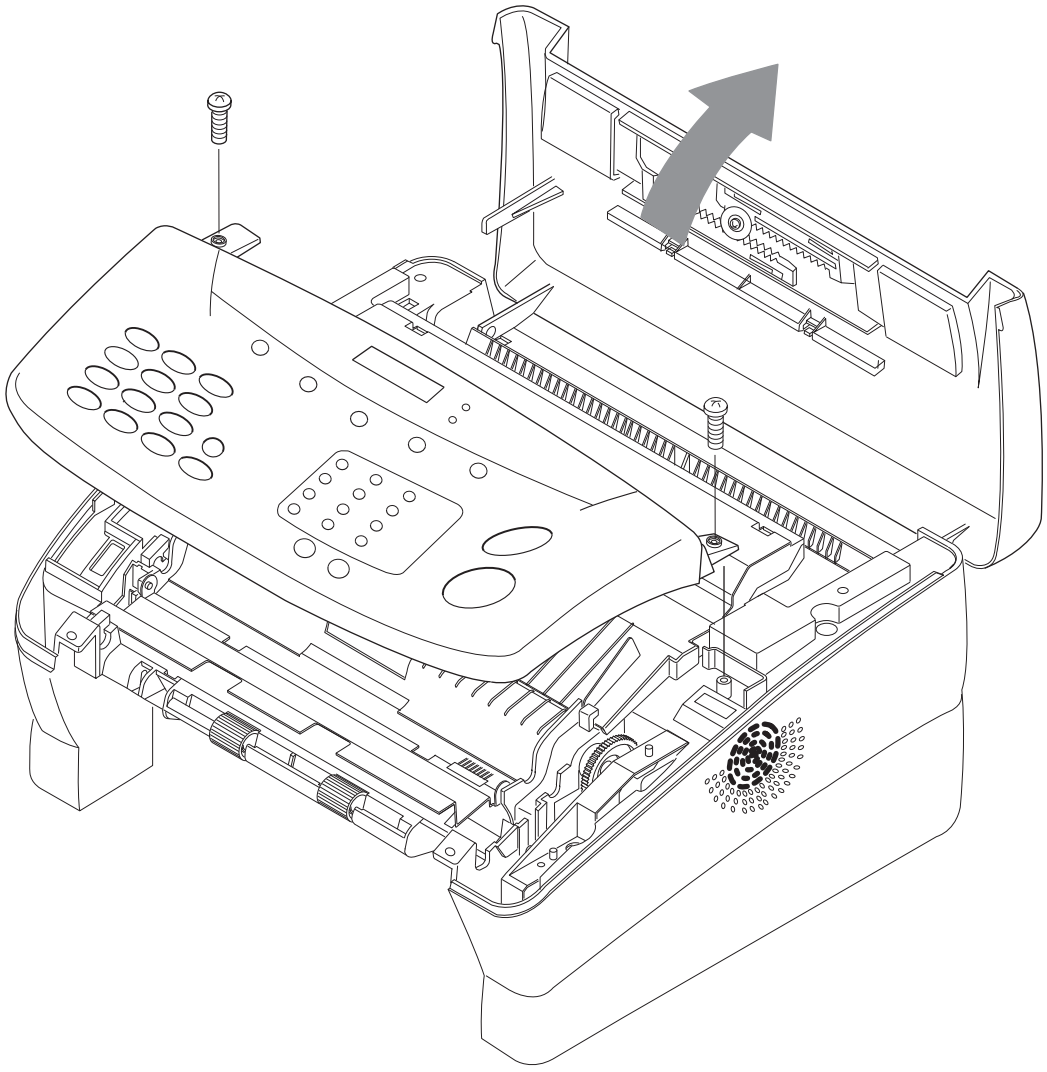
1. You should repair it on the clean and flat place and be prepared for the required equipments and parts in advance.
2. Make sure that the power cord is unplugged.
3. Unplug the connected cables.
4. Pull out the cassette, cartridge and tray which are already set up.

❖ Make sure the following instructions when disassembling the product to repair and replace parts.

1. Be careful that the OPC surface of Cartridge is not scratched and exposed to light.
2. Use the approved parts or the identical standardized articles for replacement.
3. Don' t give the excessive force to tighten or loosen the plastic parts.
4. Be careful that you don' t fall screws or small parts into the machine by mistake.
5. Be careful not to change the locations of small parts such as screws.
6. Be careful that plates should not be bent.

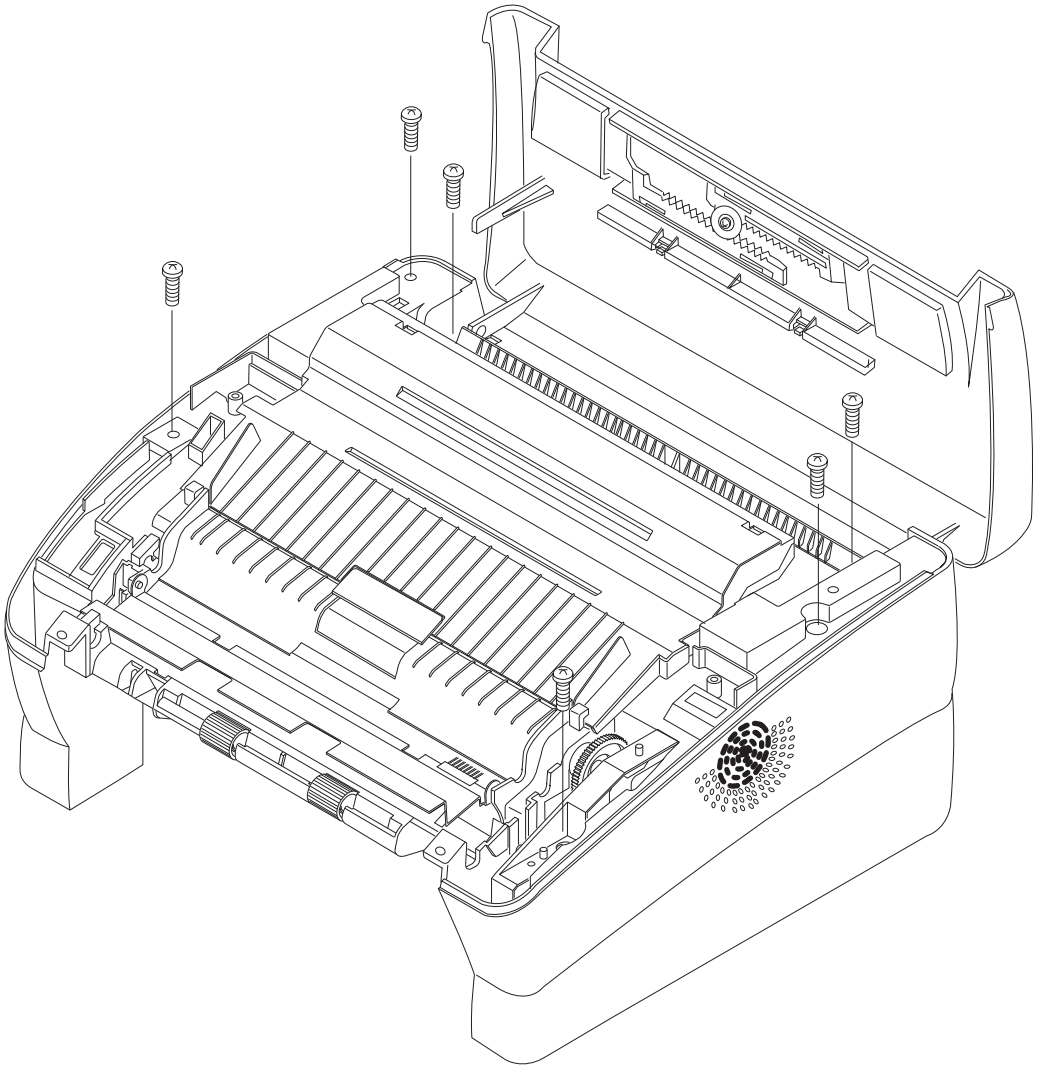
5-2. Disassemble of Operating Panel

1. Open REAR COVER.
2. Loosen screws of both sides for OPERATING PANEL.

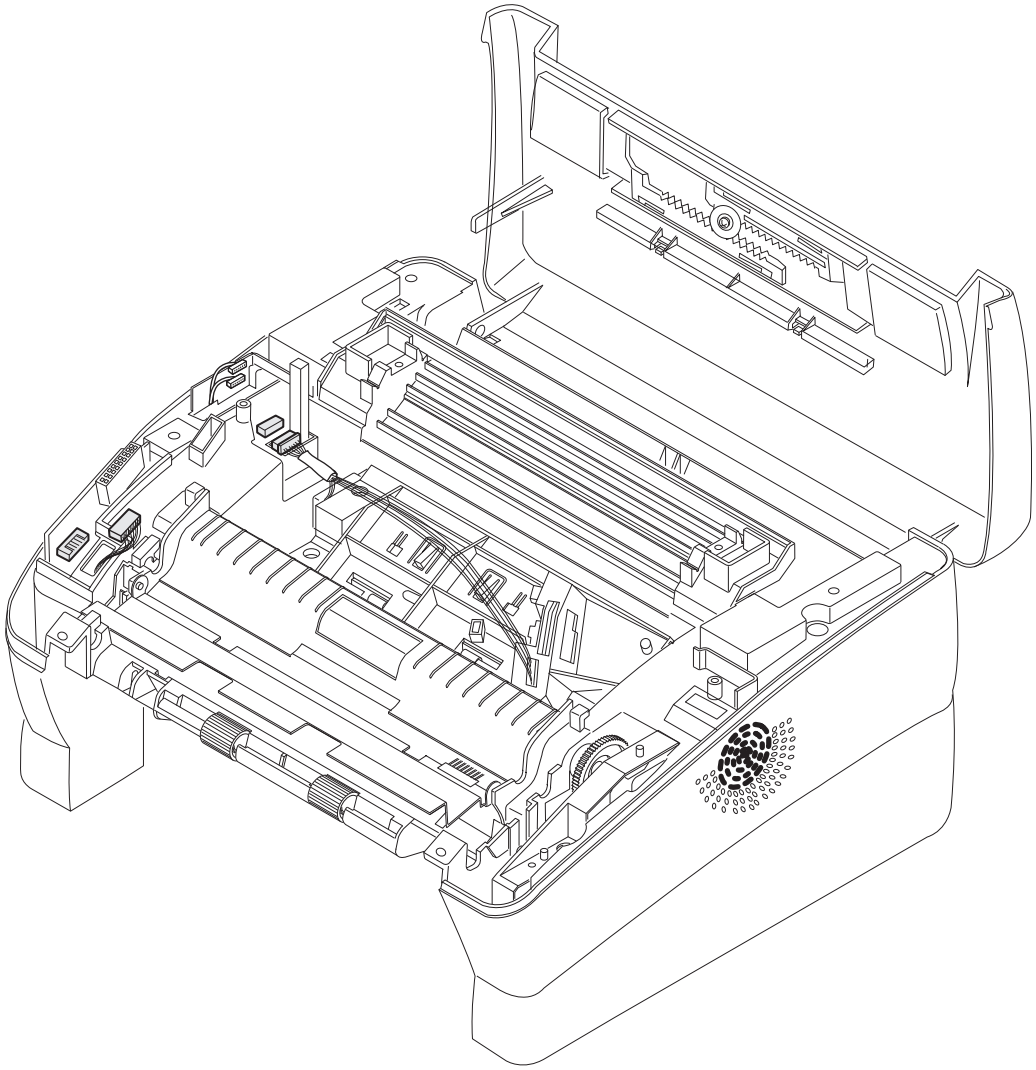


5-3. Disassemble of MAIN HOUSING

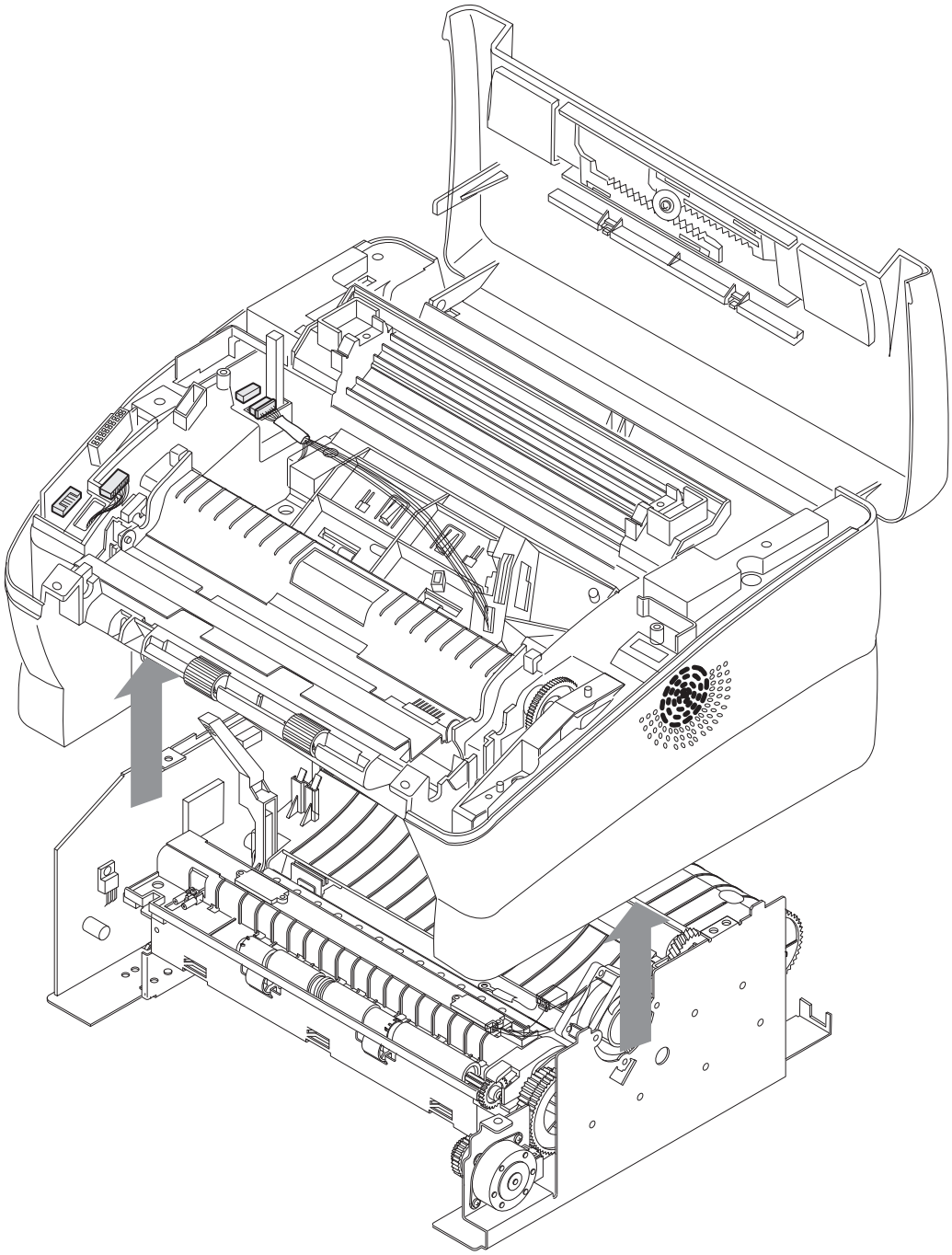
1. Open the LSU Cover
2. Loosen six screws.



2. Separate LSU, HANDSET, CIS HARNESS PCB ASS' Y MAIN CONTROLLER.

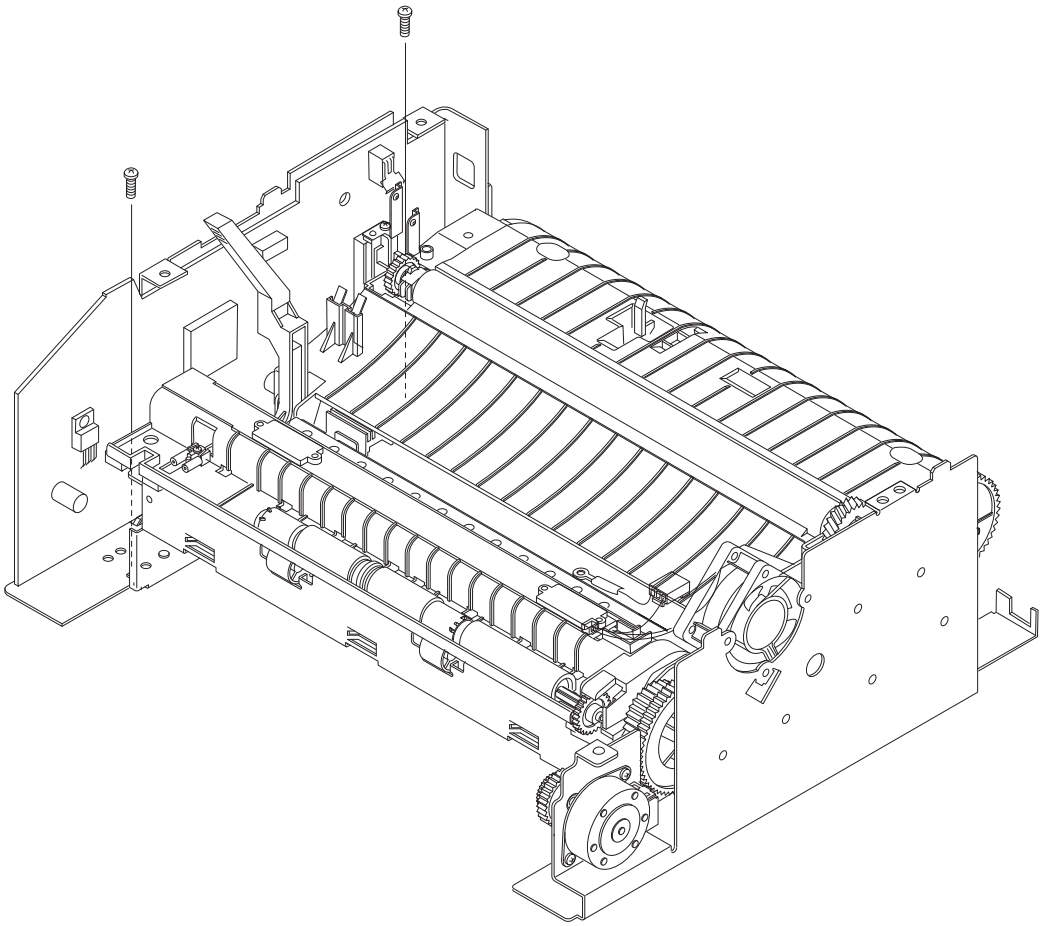


3. Hold up MAIN HOUSING carefully.



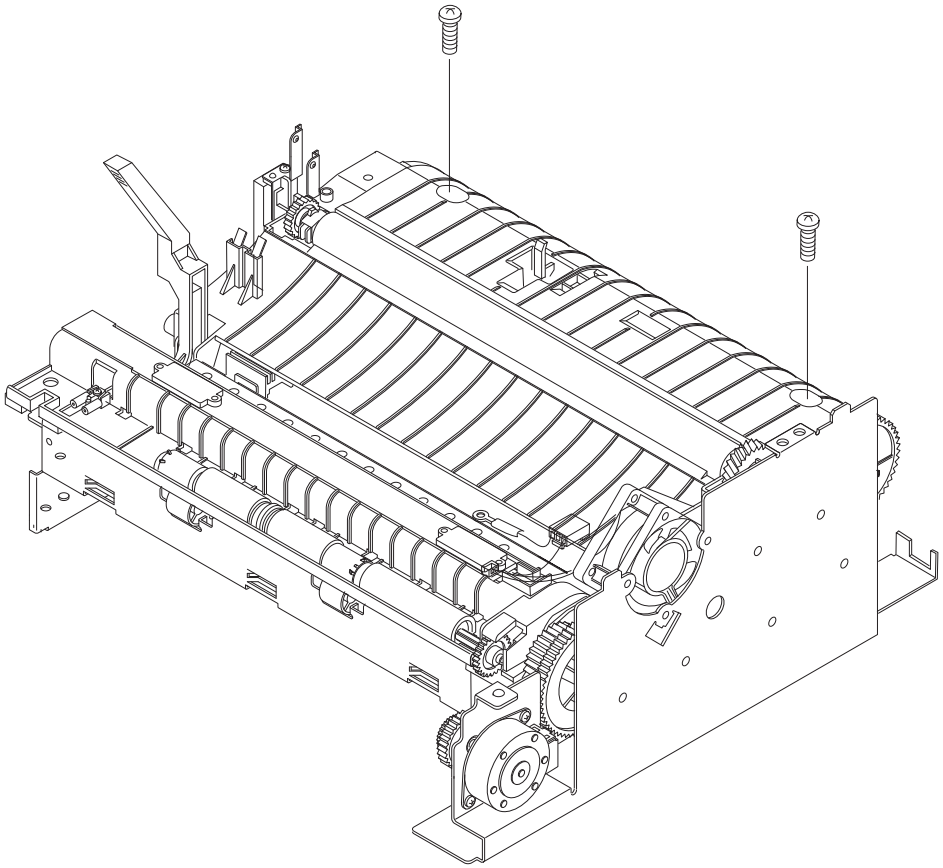
5-4. Disassemble of PCB ASS'Y MAIN CONTROLLER

1. Loosen screws of both sides in order and disassemble it.
2. Pull out Thermal HARNESS from PCB

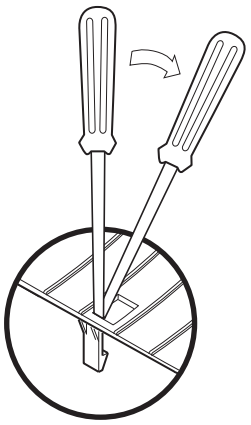


5-5. Disassemble of FRAME ASS'Y PICK UP

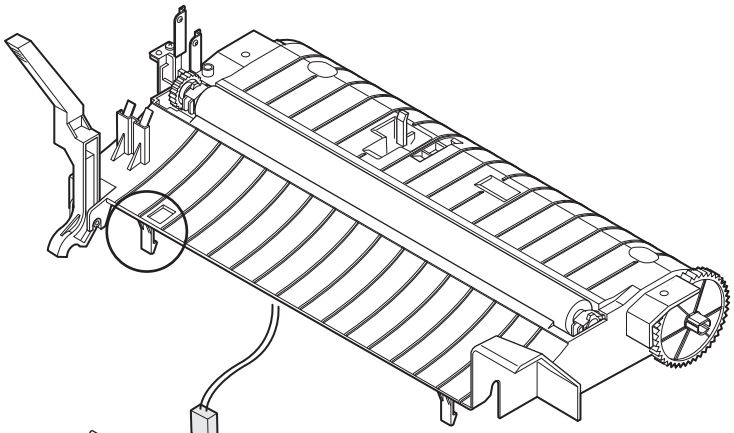
1. Loosen screws of both sides in order.

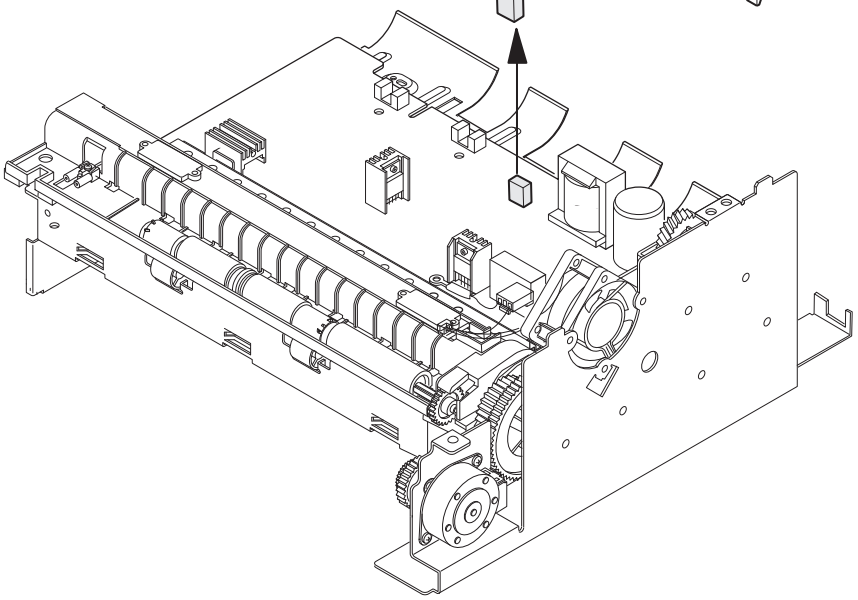


2. Disassemble FRAME PICK UP by pressing PICK UP FRAME HOOK.



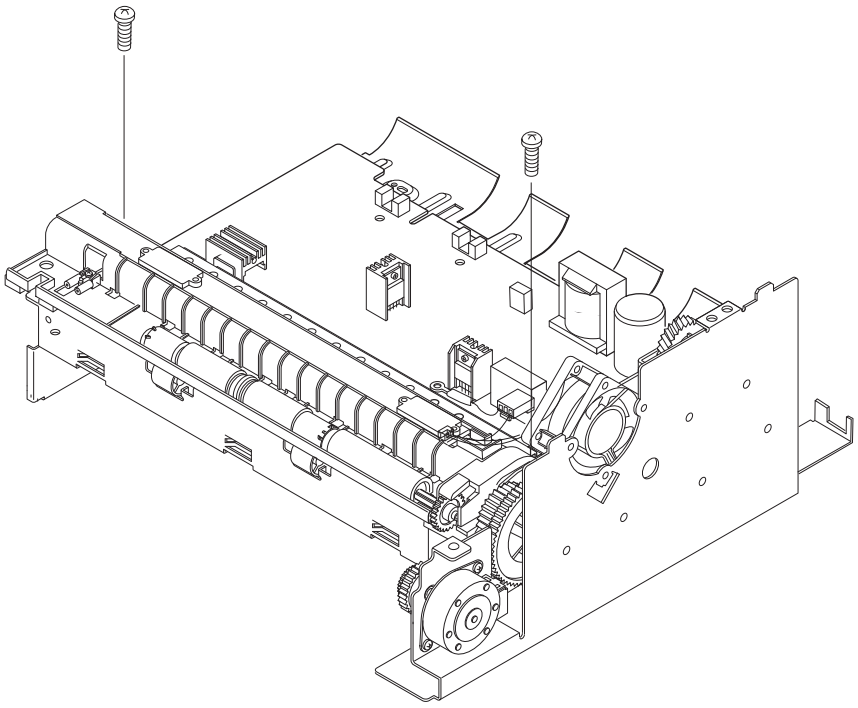
Press Hooks of both sides with Driver and so on hold up FRAME PICK UP.





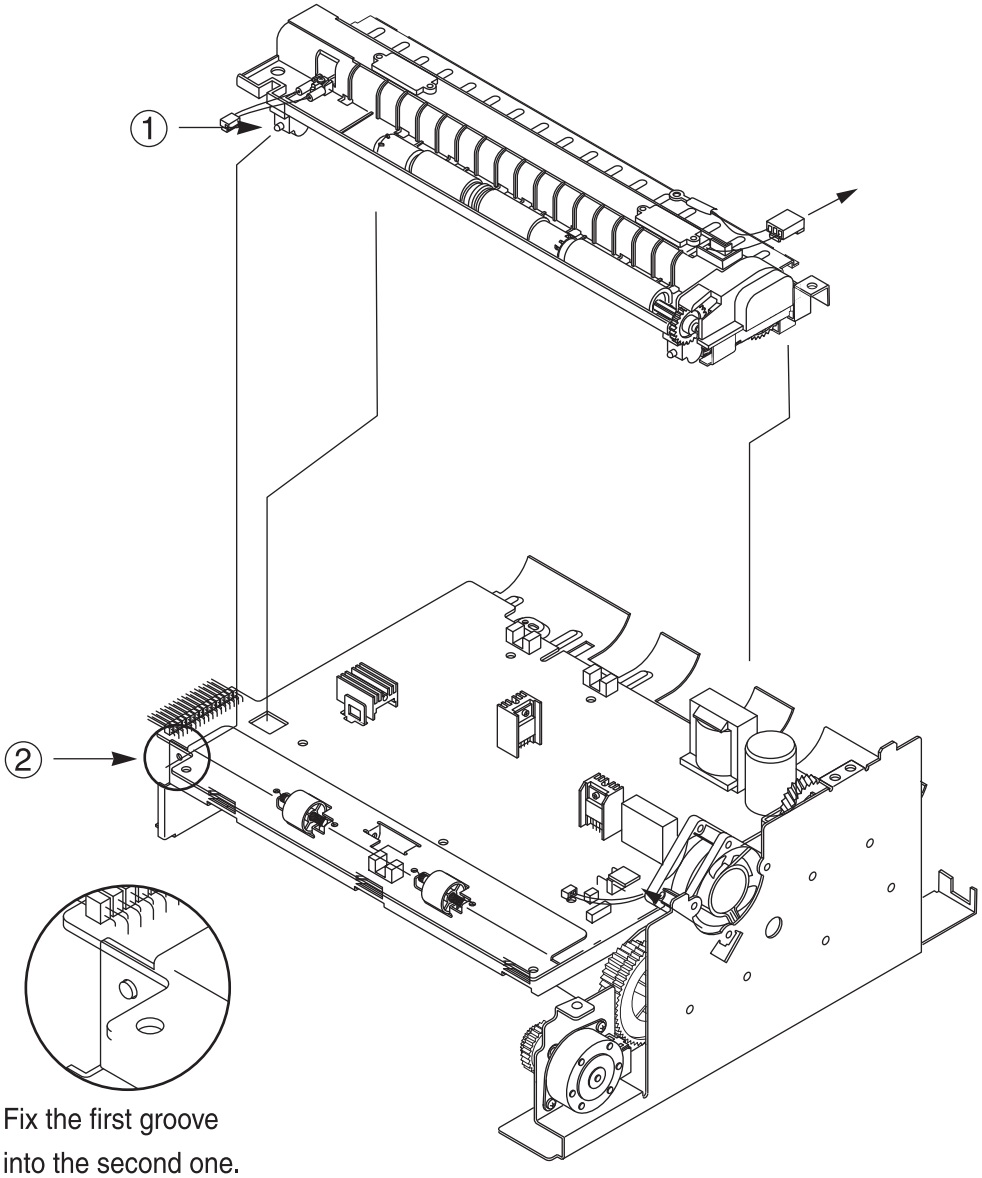
5-6. Disassemble of FRAME ASS'Y FUSER

1. Loosen screws of both sides in order.



2. Hold the both sides of FRAME and lift it up carefully.
   (Push the MAIN BRACKET HOLE and FRAME ASS' Y FUSER BOSS from both sides of the front, and separate them.)

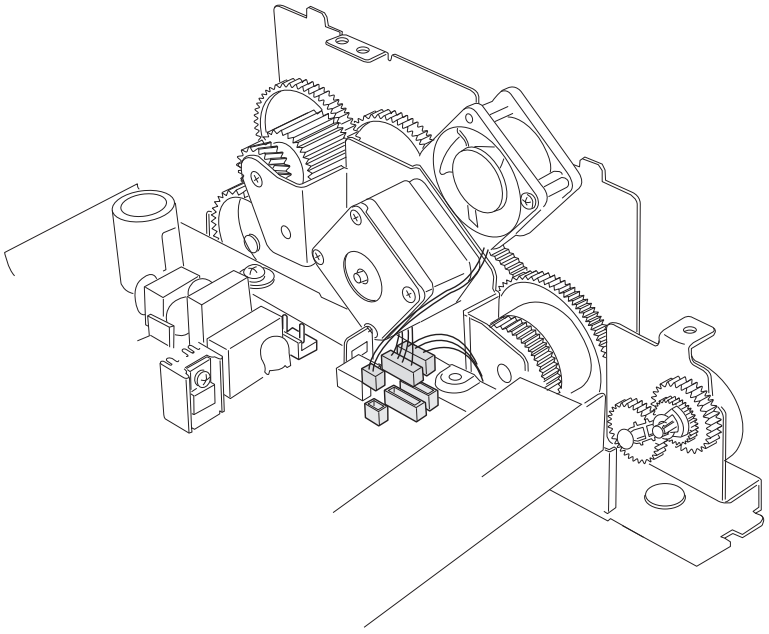
3. Pull out the HARNESS HEATER from PBA.



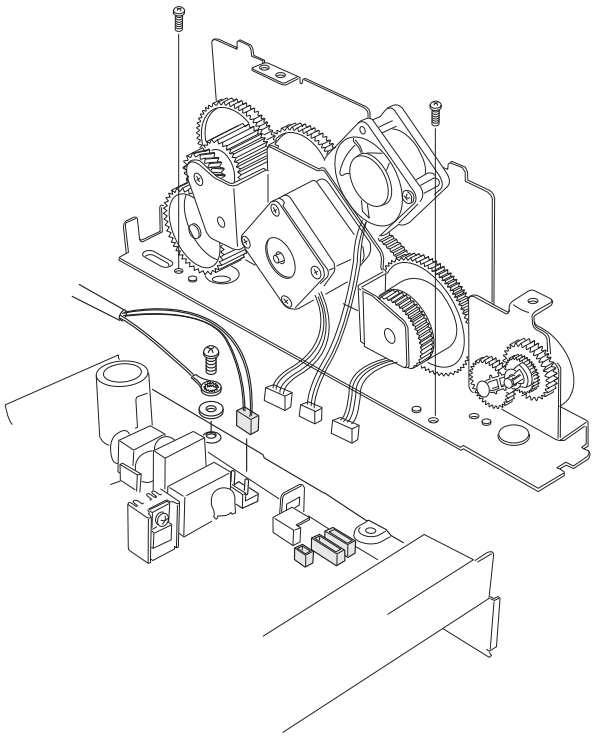
Fix the first groove
into the second one.

5-7. BRACKET ASS' Y DRIVING

1. Pull out each HARNESS from PBA.

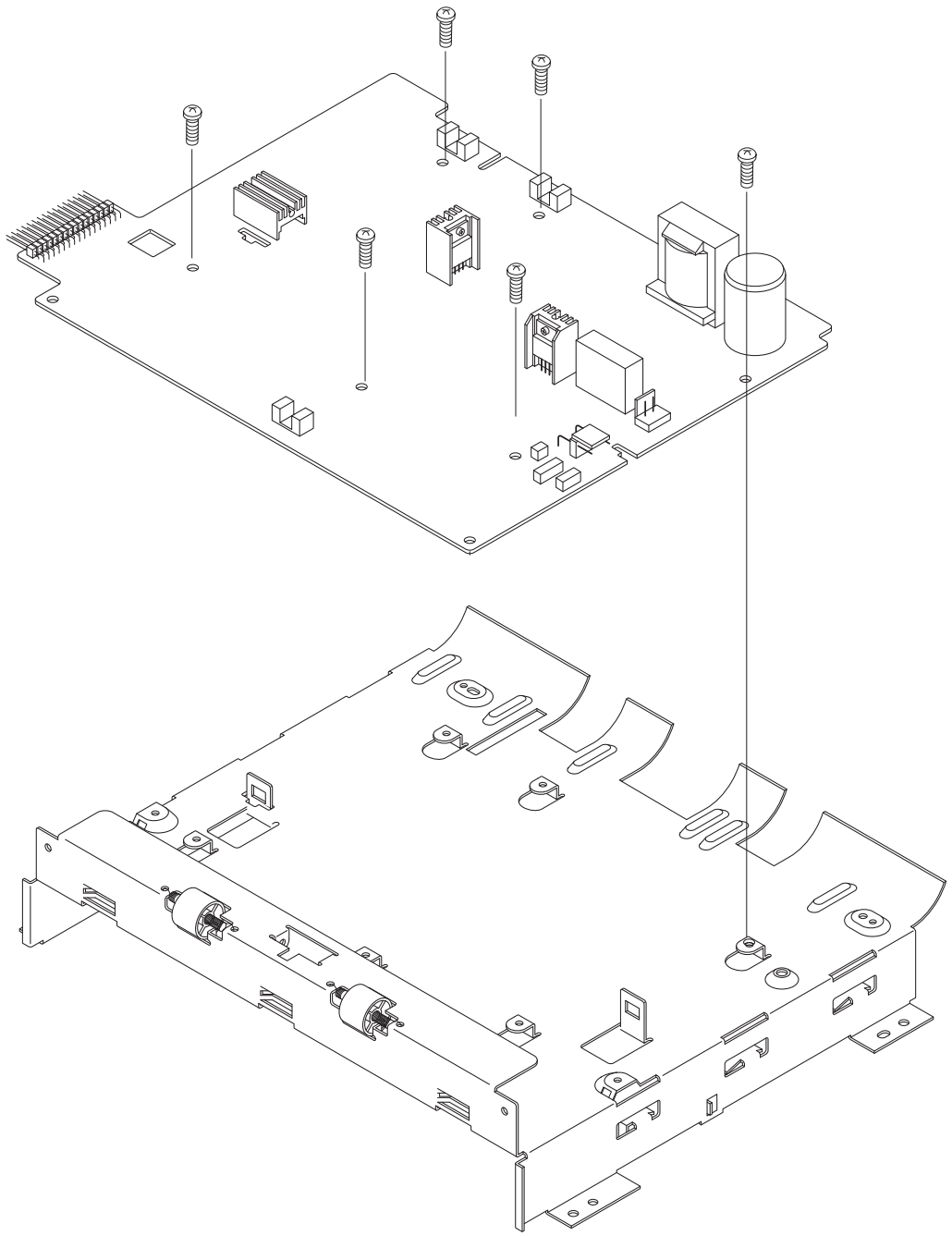


2. Pull out screws of CORD and screws from the both sides of BRACKET.



5-8. MAIN BRACKET

1. Loosen 6 screws.
2. Pull out carefully PBA from BRACKET groove.

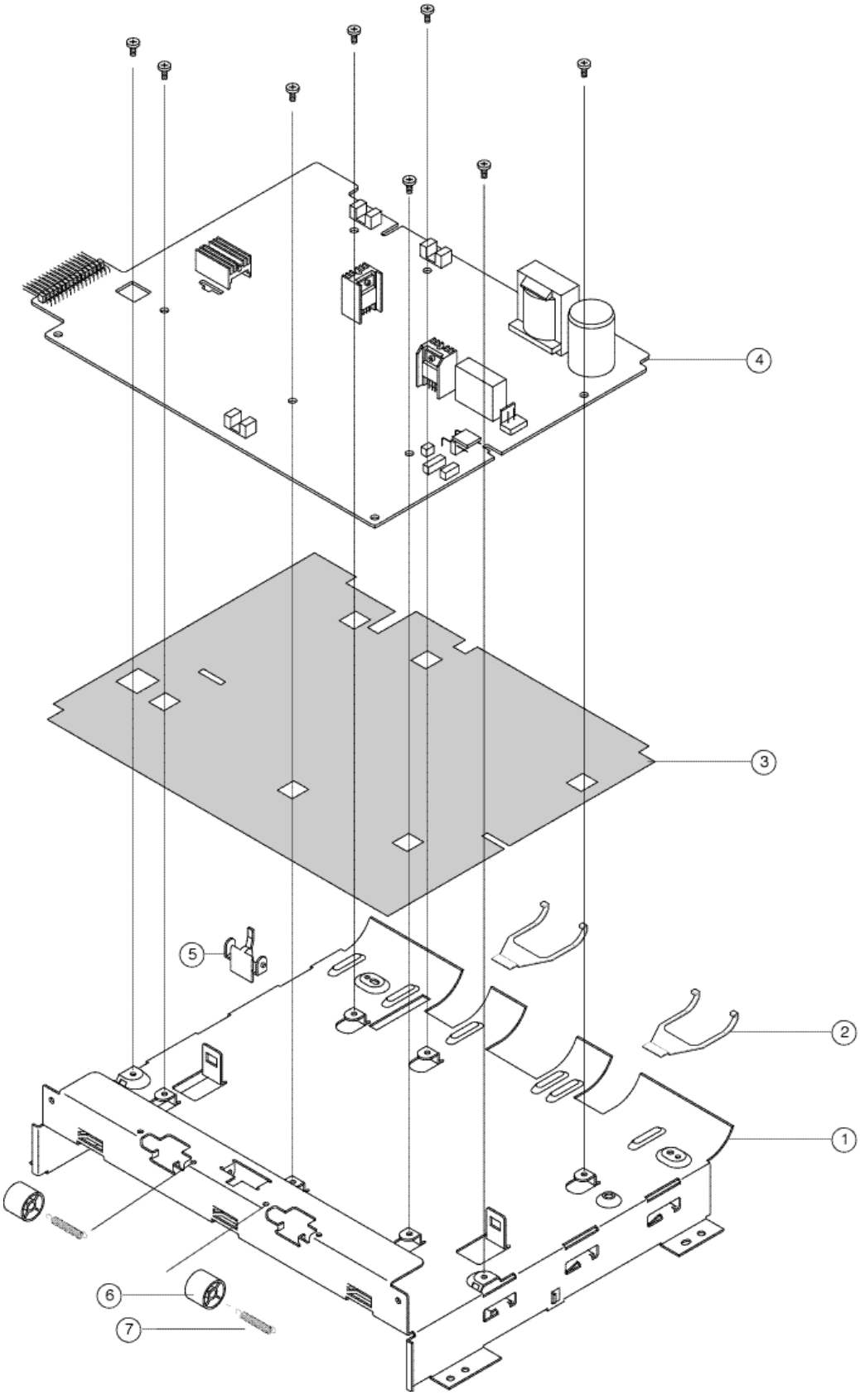


6 The Disassemble Digrm and The Parts Code List

OKIFAX 4510

1. MAIN BRACKET

INDEX	PART NO	DESCRIPTION		NOTE
1		BRACKET	MAIN MARIO	
2		PLATE	REGIST GUIDE	
3		SHEET	MAIN BRACKET	
4	5103 509 25020	PCB ASSY	HVPS & POWER MARIO	
5		ACTUATOR	EXIT	
6		ROLLER	EXIT BACK UP	
7		SPRING	EXIT BACK UP	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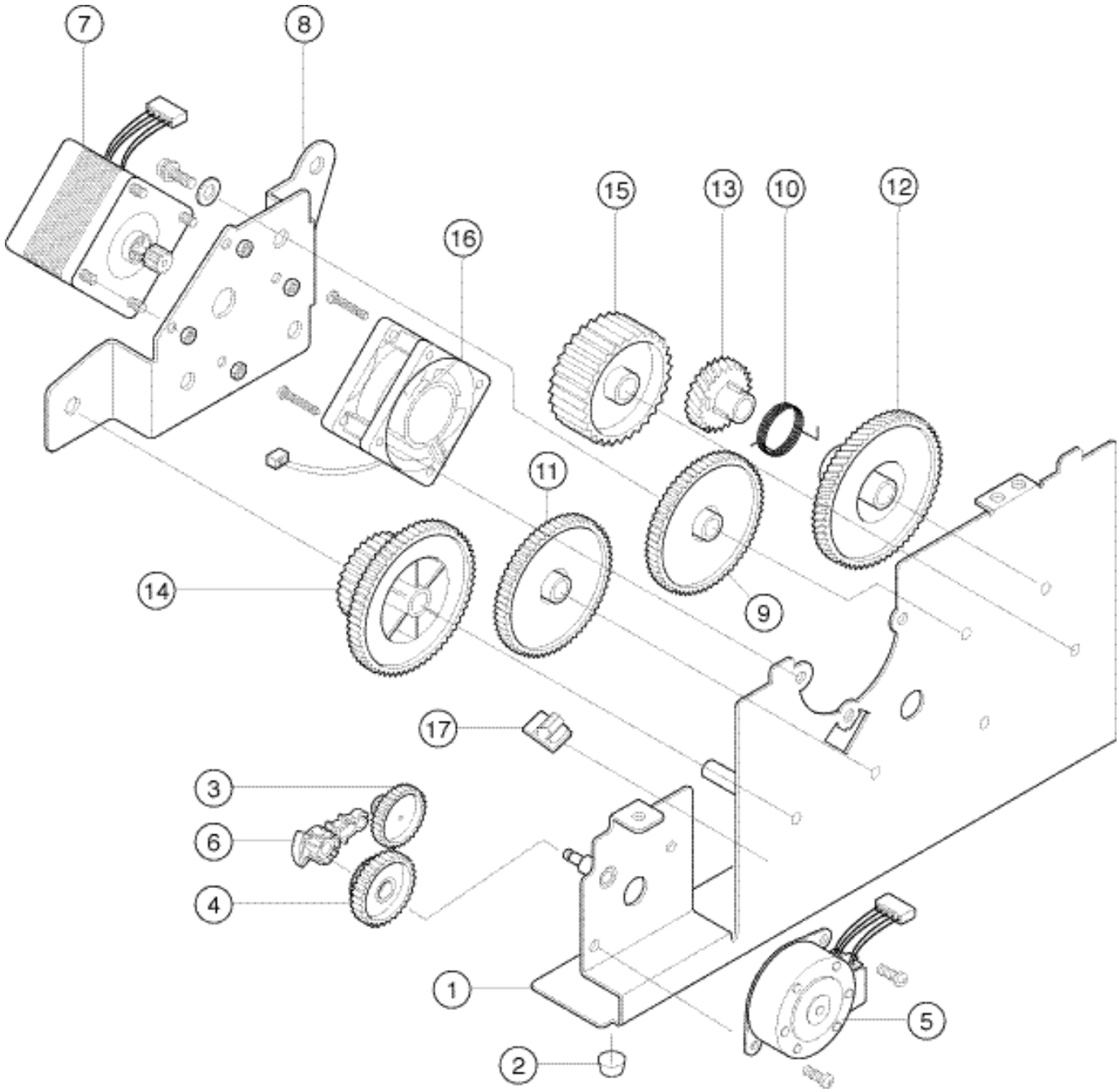
2. BRACKET ASSY DRIVING

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25280	BRACKET ASSY	DRIVE MODULE*	
1		BRACKET	DRIVE MAIN	*
2		RUBBER	FOOT, BUMPON SJ5003	*
3		GEAR	SWING Z40FAX	*
4		GEAR	IDLE Z30/48FAX	*
5	5103 509 25290	MOTOR	FAX PM35S-048-ZKS5D NMB	*
6		HOLDER	SWING GEAR FAX	*
7	5103 509 25300	MOTOR	RECORD PART 16PU-M003-K8ST NMB	*
8		BRACKET	DRIVE MOTOR	*
9		GEAR	DRIVE 1ST FOR OPC	*
10		SPRING	OPC DRIVE	*
11		GEAR	DRIVE 1ST FOR HEAT	*
12		GEAR	DRIVE 2ND FOR OPC IN	*
13		GEAR	DRIVE 2ND FOR OPC OUT	*
14		GEAR	DRIVE 2ND FOR HEAT	*
15		GEAR	DRIVE FEED IDLE	*
16		FAN	AD042MS-C50	*
17		CLAMP	METAL DAMC-102	*

* All parts with this symbol in this section belong to the DRIVE MODULE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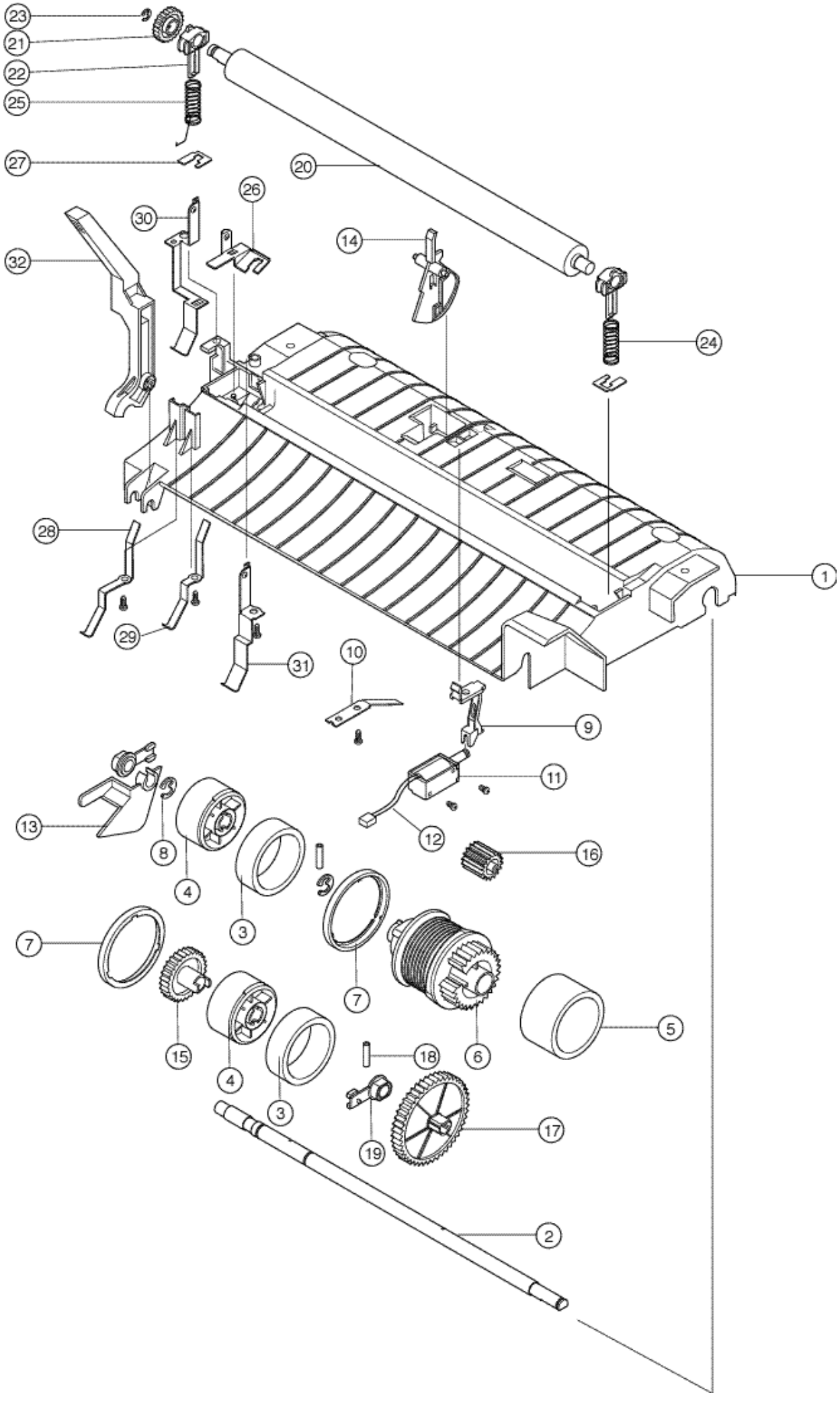
3. FRAME ASSY PICK UP

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25190	FRAME ASSY	PICK UP MODULE*	
1		FRAME	PICK UP	*
	5103 509 25200	ROLLER ASSY	FEEDING ROLLER ASSY #	
2		SHAFT	PICK UP	* #
3		BAND	REGIST	* #
4		ROLLER	REGIST	* #
5		BAND	PICK UP	* #
6		ROLLER	PICK UP	* #
7		ROLLER	PICK UP IDLE	* #
8		E-RING	6	* #
9	5103 509 25210	LEVER	PICK UP HOOK	*
10	5103 509 25220	PLATE SPRING	PICK UP DP1221-120	*
11	5103 509 25230	SOLEN01D	PICK UP	*
12		HARNESS	PICK UP SOLNOID 2PIN, 70mm	*
13		ACTUATOR	PAPER SENSOR	* #
14		ACTUATOR	INPUT SENSOR	*
15		GEAR	PICK UP INSIDE	* #
16		GEAR	PICK UP IDLE	*
17		GEAR	PICK UP	* #
18		PIN	SHAFT 2	* #
19		BUSH	PICK UP	* #
	5103 509 25360	ROLLER ASSY	TRANSFER ROLLER ASSY X	
20		ROLLER	TRANSFER	* X
21		GEAR	TRANSFER	* X
22		BUSH	TRANSFER	* X
23		E-RING	4 BLACK	* X
24		SPRING	TRANSFER LH	* X
25		SPRING	TRANSFER RH	* X
26		ELECTRODE PLAT	TRANSFER	*
27		SHEET	BUSH TRANSFER	*
28	5103 509 25240	ELECTRODE PLAT	PRIMARY	*
29	5103 509 25250	ELECTRODE PLAT	GRID	*
30	5103 509 25260	ELECTRODE PLAT	DEVELOPER	*
31	5103 509 25270	ELECTRODE PLAT	SUPPLY	*
32		LEVER	RELEASE BACK UP	*

* All parts with this symbol in this section belong to the PICK UP MODULE

\# All parts with this symbol in this section belong to the FEEDING ROLLER ASSY

X All parts with this symbol in this section belong to the TRANSFER ROLLER ASSY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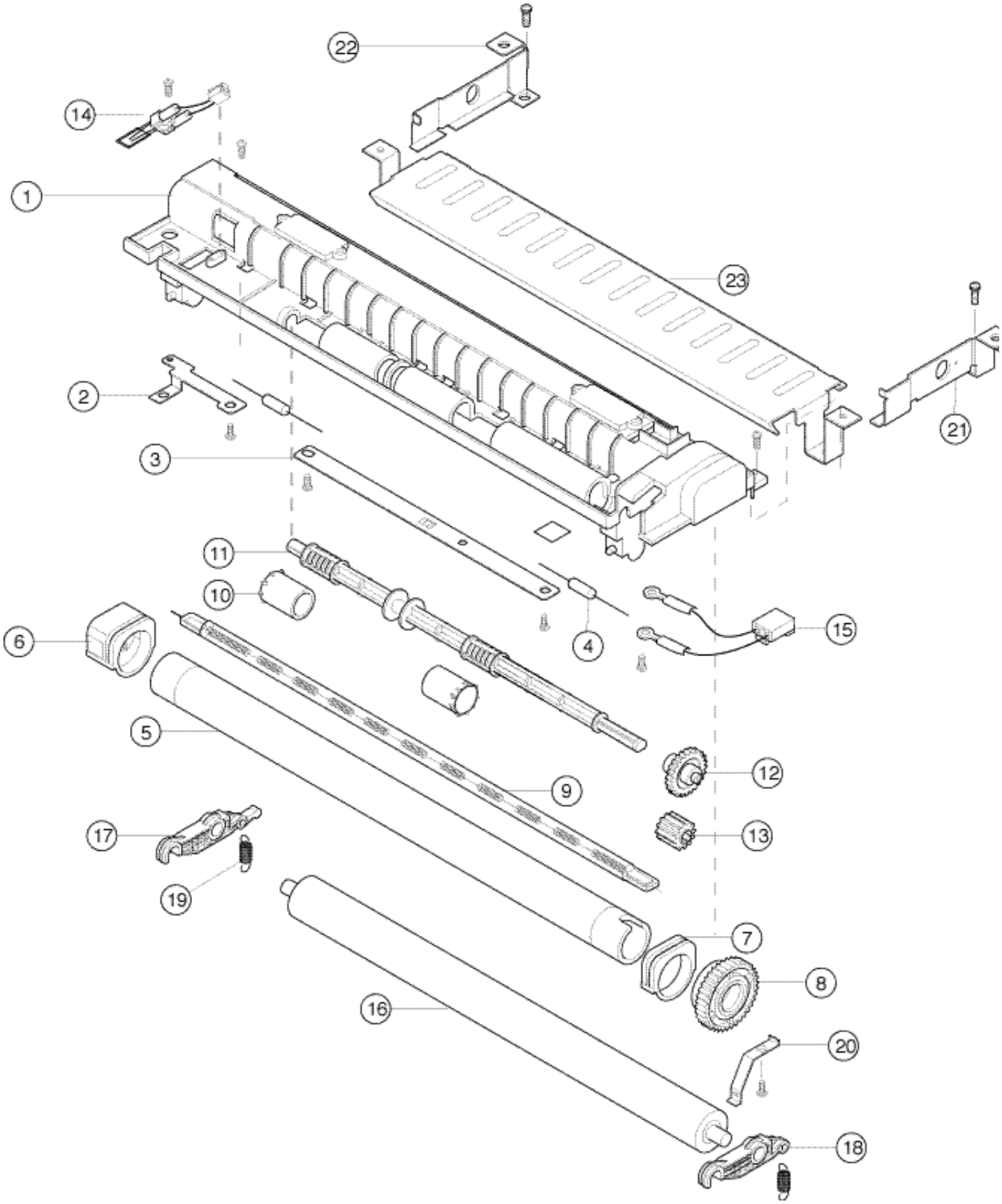
4. FRAME ASSY FUSER

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25030	FRAME ASSY	FUSER MODULE*	
1		FRAME	FUSER	*
2		ELECTRODE PLAT	AC L	*
3		ELECTRODE PLAT	AC M	*
4	5103 509 25040	FUSE	UCHIHASHI 125	*
5	5103 509 25110	ROLLER	HEAT	*
6	5103 509 25120	BUSH	HEAT ROLLER LH	*
7	5103 509 25130	BUSH	HEAT ROLLER RH	*
8		GEAR	HEAT ROLLER	*
9	5103 509 25140	LAMP	HALOGEN LAMP DONG-SEO 220V	*
10		BAND	EXIT	*
11		SHAFT	EXIT ROLLER	*
12		GEAR	EXIT ROLLER	*
13		GEAR	IDLE FUSER	*
14	5103 509 25150	SENSOR	THERMISTER FR-60209	*
15		HARNESS	HEATER	*
16	5103 509 25160	ROLLER	BACK UP	*
17	5103 509 25170	BUSH	BACK UP ROLLER LH	*
18	5103 509 25180	BUSH	BACK UP ROLLER RH	*
19		SPRING	BACK UP	*
20		ELECTRODE PLAT	GND	*
21		BRACKET	BACK UP ROLLER RH	*
22		BRACKET	BACK UP ROLLER LH	*
23		BRACKET	GUIDE PAPER	*

* All parts with this symbol in this section belong to the FUSER MODULE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5. HOUSING PART

INDEX	PART NO	DESCRIPTION		NOTE
1	5103 509 25550	COVER	MAIN W/O HANDSET	
2		ROLLER	EXIT PINCH	
3		SHAFT	EXIT PINCH	
4		ROLLER	EXIT PINCH	
5		PLATE SPRING	EXIT PINCH	
6		SHAFT	EXIT PINCH	
7	5103 509 25310	ROLLER	FEED	
8	5103 509 25320	ROLLER	EXIT FAX	
9	5103 509 25330	GEAR	FEED/EXIT ROLLER	
10	5103 509 25510	SENSOR	CIS DL107-10US LITEON 300DP	
11	5103 509 25340	HOLDER	CIS DL107-10US LITEON 300DP	
12		HARNESS	CIS ,10PIN, 90mm	
13		PAD	CIS DYNA 300	
14	5103 509 25530	SHEET	CIS GUIDE P	
	5103 509 25350	ADF	ADF ROLLER ASSY *	
15		ROLLER	ADF	*
16		PIN	ADF ROLLER	*
17		GEAR	ADF ROLLER	*
18		FRAME	DRIVE FAX	
19		GEAR	IDLE Z52 FAX	
	5103 509 25370	ASSY	READING BAR ASSY #	
20		BRACKET	READING BAR	#
21		SHEET	READING BAR	#
22		BRUSH	ANTI STATIC	#
23		SEAL	READING BAR	#
24		BRUSH	ANTI STATIC CIS	#
25		SPRING	READING BAR	#
26		ELECTRODE PLAT	GND	
27		ELECTRODE PLAT	GND	
28		ROLLER	REGIST PINCH	
29		SPRING	REGIST PINCH	
	5103 509 25380	PAPER SEP.	PAPER SEPERATION ASSY X	
30		PAD	SEPERATION	X
31		SPRING	PAD	X
32		FRAME	PAPER PAD	X
33		SHEET	SEPERATION	X

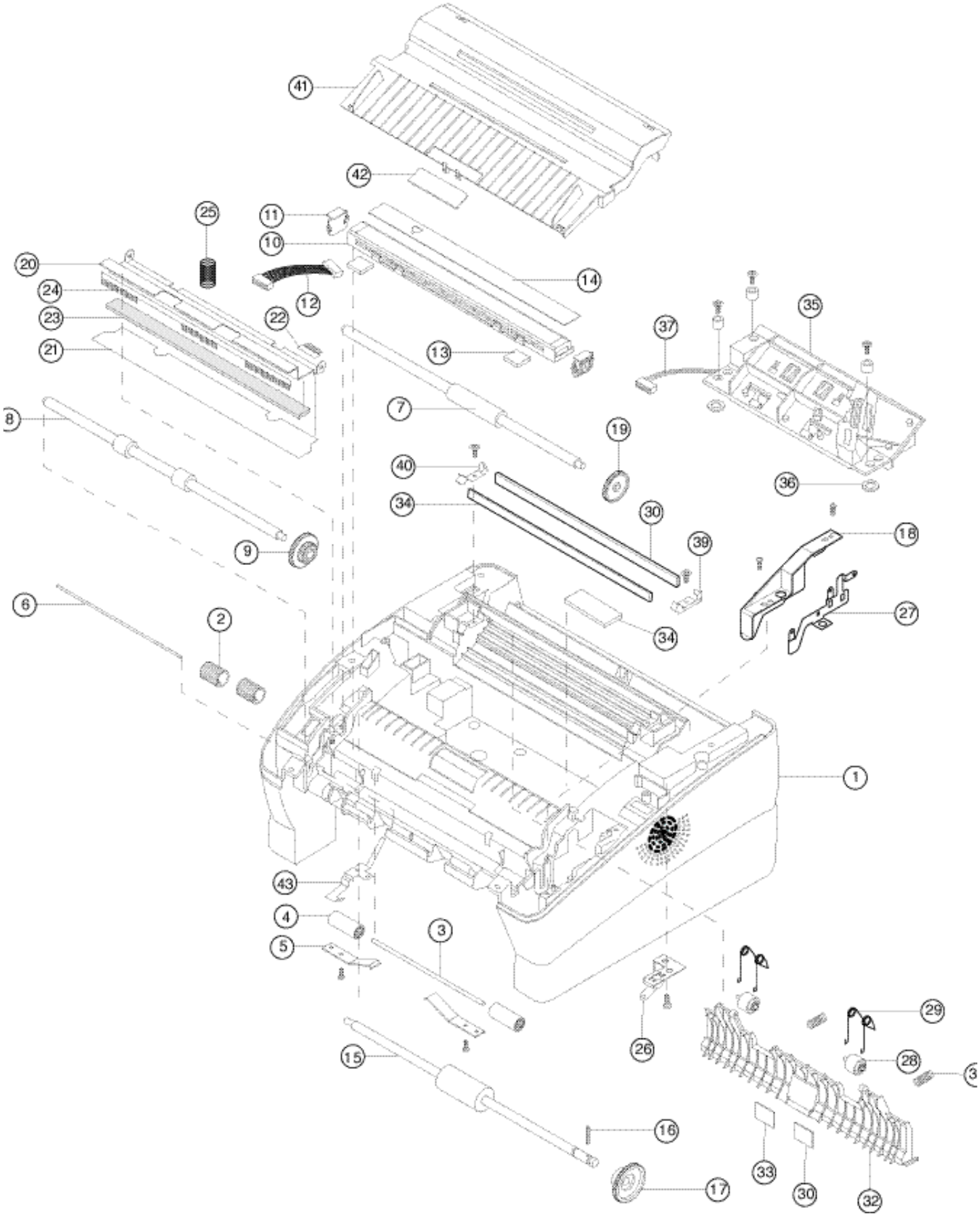
5. HOUSING PART

INDEX	PART NO	DESCRIPTION		NOTE
34		SEAL	LSU	
35	5103 509 25390	LSU	LPA1601P	
36		WASHER	FILM PI=13.0 6.2 T=0.2	
37	5103 509 25400	HARNESS	LSU	
38	5103 509 25410	MIRROR	LSU BV2	
39		PLATE SPRING	LSU MIRROR RH	
40		PLATE SPRING	LSU MIRROR LH	
41		COVER	LSU	
42		FILM	LSU COVER	
43		ELECTRODE PLAT	CIS	

* All parts with this symbol in this section belong to the ADF ROLLER ASSY

\# All parts with this symbol in this section belong to the READING BAR ASSY

X All parts with this symbol in this section belong to the PAPER SEPERATION ASSY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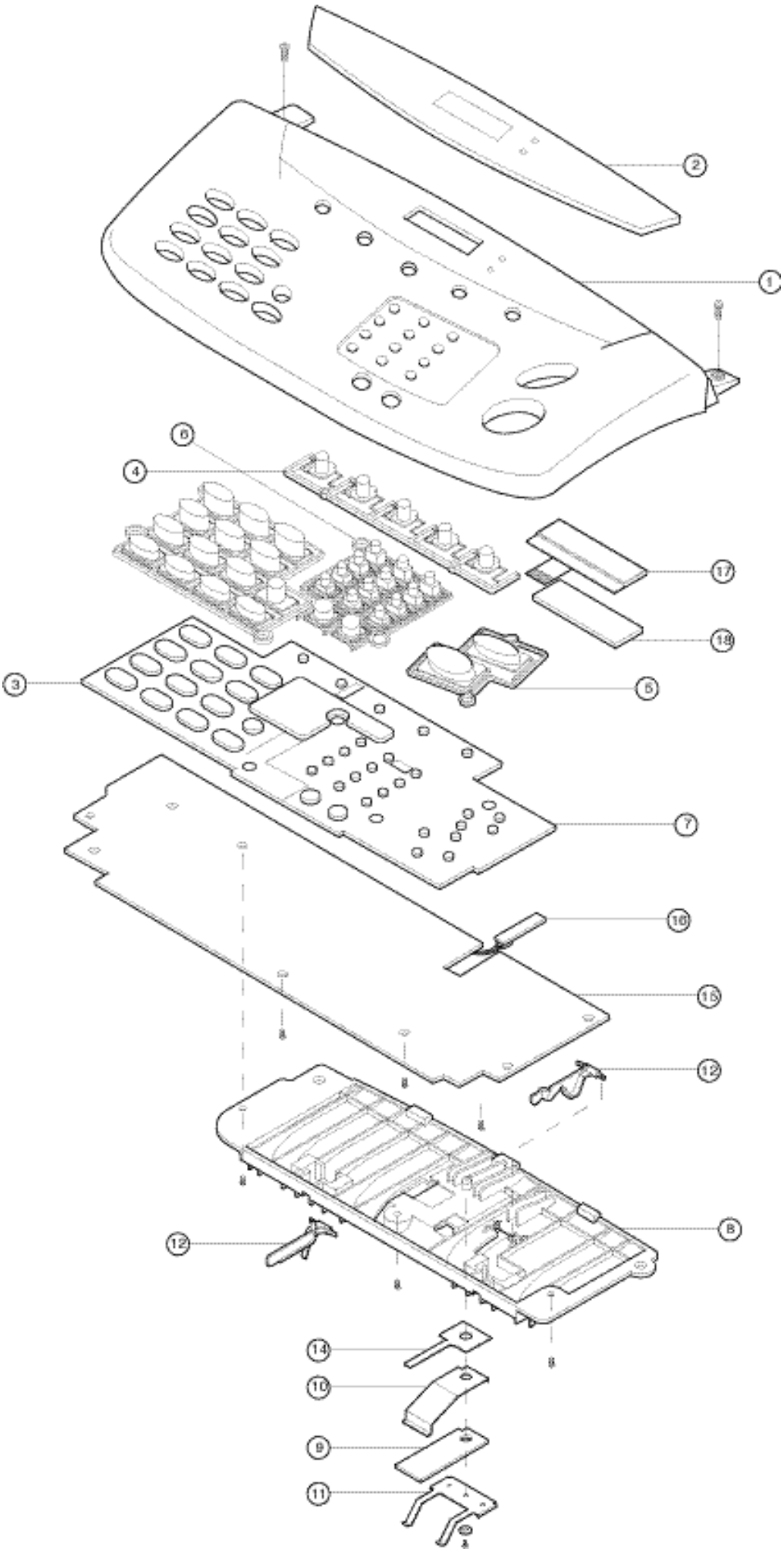
6. OPERATING PANEL ASSY

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25570	OPERATING PANEL	OPERATING PANEL MODULE *	
1		COVER	OPERATING PANEL	*
2	5103 507 67530	WINDOW	LCD GLASS OKIFAX 4510	*
3		KEY	TELEPHONE	*
4		KEY	FUNCTION	*
5		KEY	START/STOP	*
6		KEY	ONE TOUCH	*
7	5103 509 25590	PAD	KEY RUBBER	*
	5103 509 25420	SEPARATOR	ADF SEPARATOR & SENSOR #	
8		FRAME	GUIDE UPPER	# *
9	5103 509 25430	PAD	ADF	# *
10		PLATE SPRING	ADF	# *
11		PLATE SPRING	ADF SET	# *
12		ACTUATOR	ADF SENSOR	# *
13		ACTUATOR	RP SENSOR	# *
14		ELECTRODE PLAT	ADF SPRING	*
15	5103 509 25600	PCB ASSY	OPERATION PCB	*
16		PCB ASSY	LED	*
17	5103 509 25610	LCD	WINTEK LCD (16 1)	*
18		SEAL	WINDOW LCD	*

* All parts with this symbol in this section belong to the OPERATING PANEL MODULE

All parts with this symbol in this section belong to the ADF SEPARATOR & SENSOR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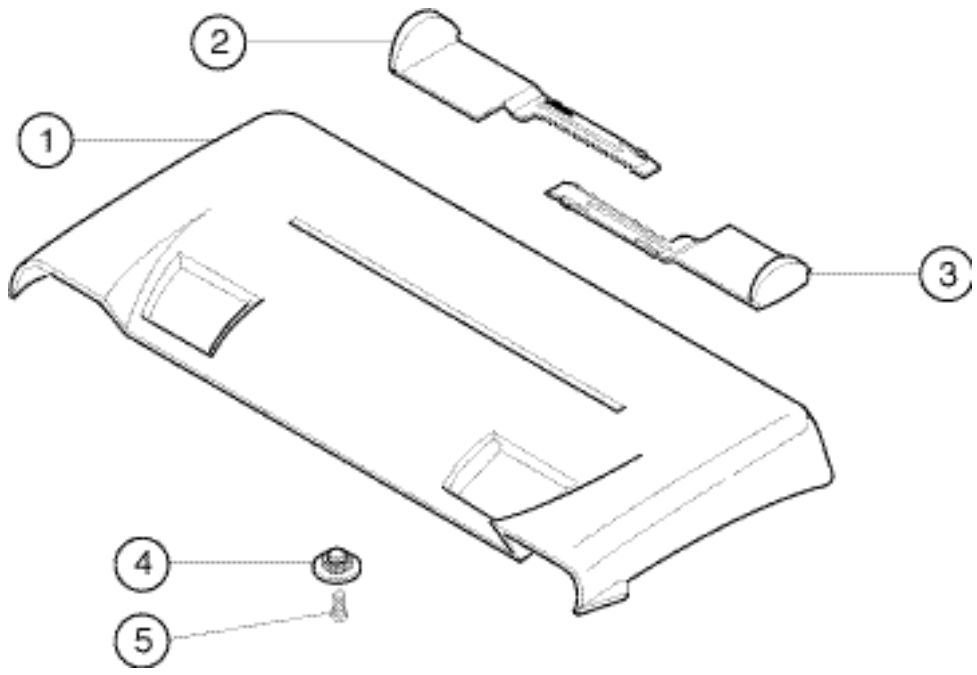
7. REAR COVER ASSY

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25440	ASSY	REAR COVER ASSY *	
1		COVER	REAR	*
2		GUIDE	RACK LH	*
3		GUIDE	RACK RH	*
4		GEAR	GUIDE RACK	*
5		SCREW	TAPPING W/HEAD 3 6 Galvanization	*

* All parts with this symbol in this section belong to the REAR COVER ASSY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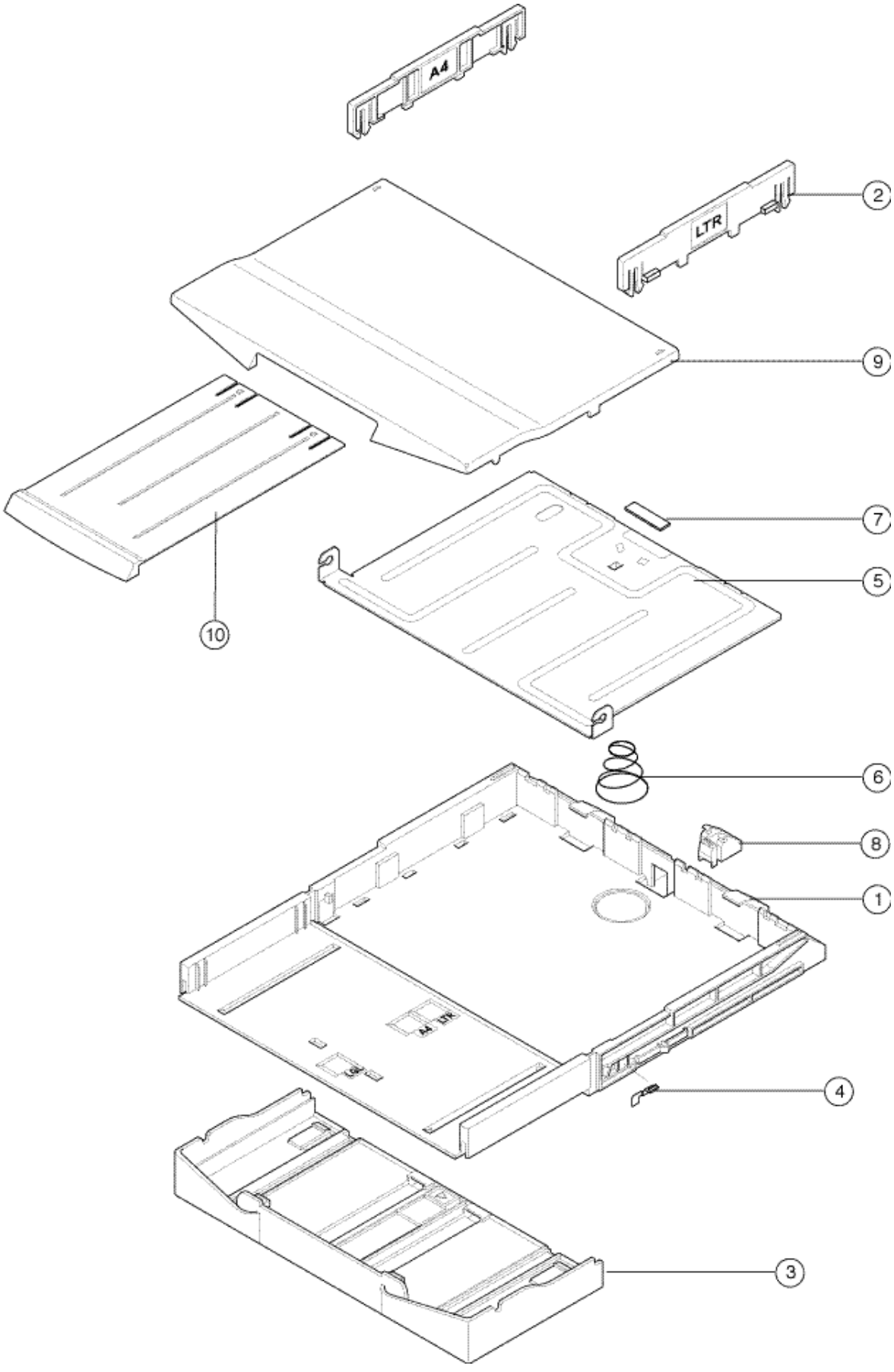
8. CASSTTE

INDEX	PART NO	DESCRIPTION		NOTE
	5103 509 25450	CASSTTE	CASSTTE MODULE*	
1		FRAME	CASSETTE MAIN	*
2		GUIDE	PAPER	*
3		FRAME	CASSETTE REAR	*
4		ELECTRODE PLAT	CASSETTE GND	*
5		PLATE	CASSETTE	*
6		SPRING	CASSETTE	*
7		PAD	CASSETTE PLATE	*
8		LEVER	CASSETTE PLATE	*
	5103 509 25460	ASSY	EXIT PRINT ASSY #	
9		TRAY	EXIT PRINT	# *
10		TRAY	EXIT PRINT EXTEND	# *

* All parts with this symbol in this section belong to the CASSTTE MODULE

\# All parts with this symbol in this section belong to the EXIT PRINT ASSY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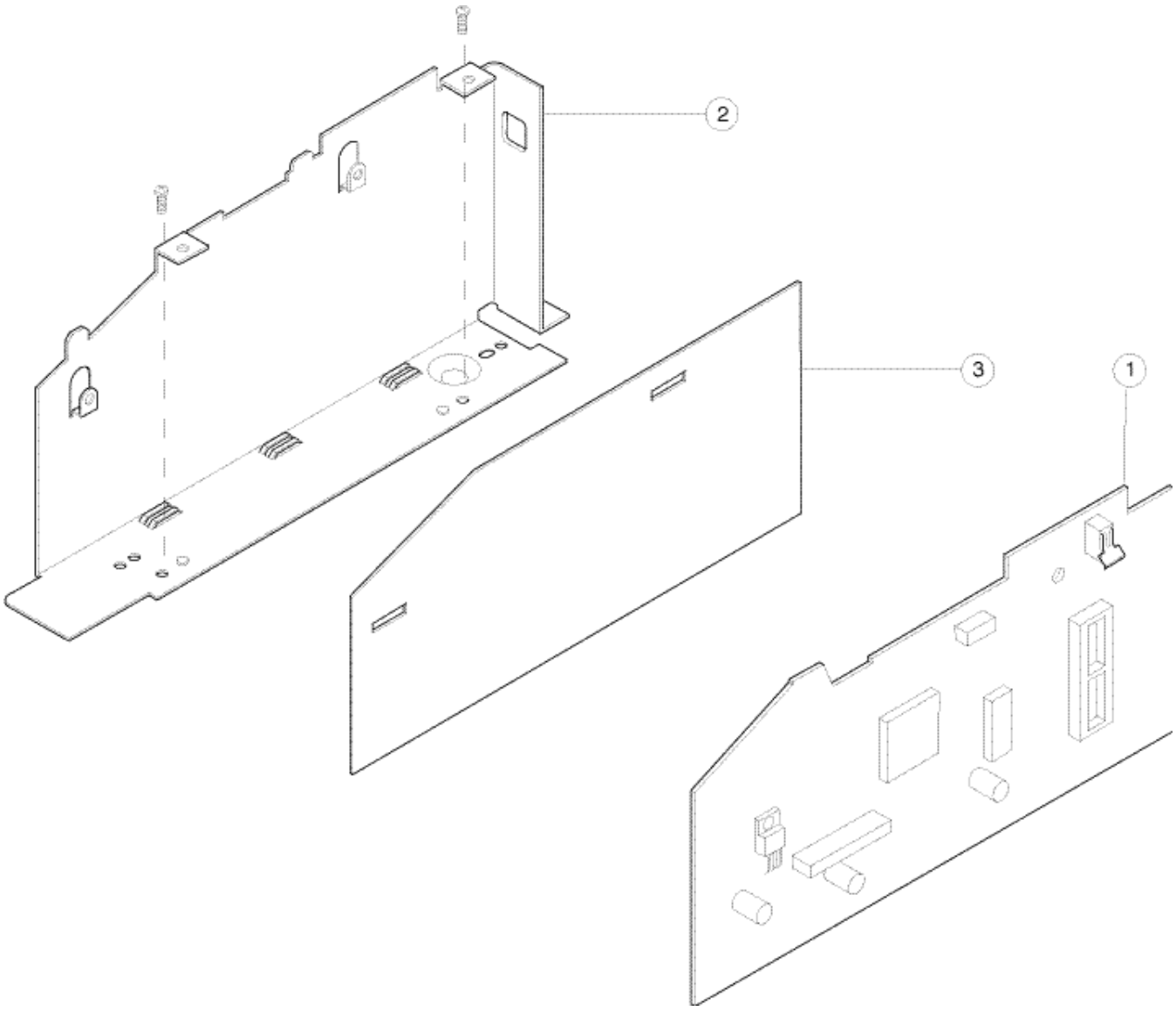
9. PCB ASSY MAIN CONTROLLER

INDEX	PART NO	DESCRIPTION		NOTE
1	5103 509 25500	PCB ASSY	MAIN CONTROL BOARD	
2		BRACKET	MAIN CONTROLLER	
3		FILM	INSULATION MAIN CONTROLLER	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